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Weed Hay Fever

THE Late Summer and Early Autumn Type of Hay Fever is caused by many of the common weeds, as–Ragweed, Russian Thistle, Sage Brush –the species differing widely according to locality. To assure specific treatment diagnostic tests are essential. To assure preseasonal treatment early diagnoses should be made,–otherwise the less desirable, though often beneficial, coseasonal treatment will be involved. List of late flowering weeds, showing regional distribution and time of pollination, sent on request.

GIANT RAGWEED *Ambrosia trifida*

RUSSIAN THISTLE *Salsola pestifer*

SAGE BRUSH *Artemisia tridentata*

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THE BOSTON
Medical and Surgical
JOURNAL

VOLUME 190 JUNE 5, 1924 NUMBER 23

ORIGINAL ARTICLES

Report of an Acute Lung Abscess in a Child Cured by Artificial Pneumothorax*

BY GERARDO M. BALBONI, M. D., AND EDWARD D CHURCHILL, M. D., BOSTON, MASS.

ALTHO the treatment of non-tuberculous abscess of the lung by artificial pneumothorax is not at all a new procedure, very few clinicians are aware of the striking success which may attend its use in properly selected cases. This case is reported because we have been able to find in the literature only three other cases of acute abscess in children treated by pneumothorax. It is hoped to stimulate interest which may lead to its prompt employment in suitable cases for the relief of this very distressing condition.

*From West Surgical and Children's Medical Services, Massachusetts General Hospital.

REPORT OF CASE

F. A., a Syrian child eight years of age, was operated upon for the removal of residual tonsillar tissue at a neighboring institution on September 28, 1923. The operation was performed under ether anaesthesia, with the patient in a sitting posture, and was difficult and long. The post-operative course was uneventful except for a slight fever (Fig. 1), and the patient was discharged on the fourth day.

On October 9, twelve days after the operation, she was readmitted because of a severe chill accompanied by a temperature of 105° and pain in the left side of the chest. She was extremely ill with a continued fever, frequent vomiting, and a non-productive hacking cough. On October 14,

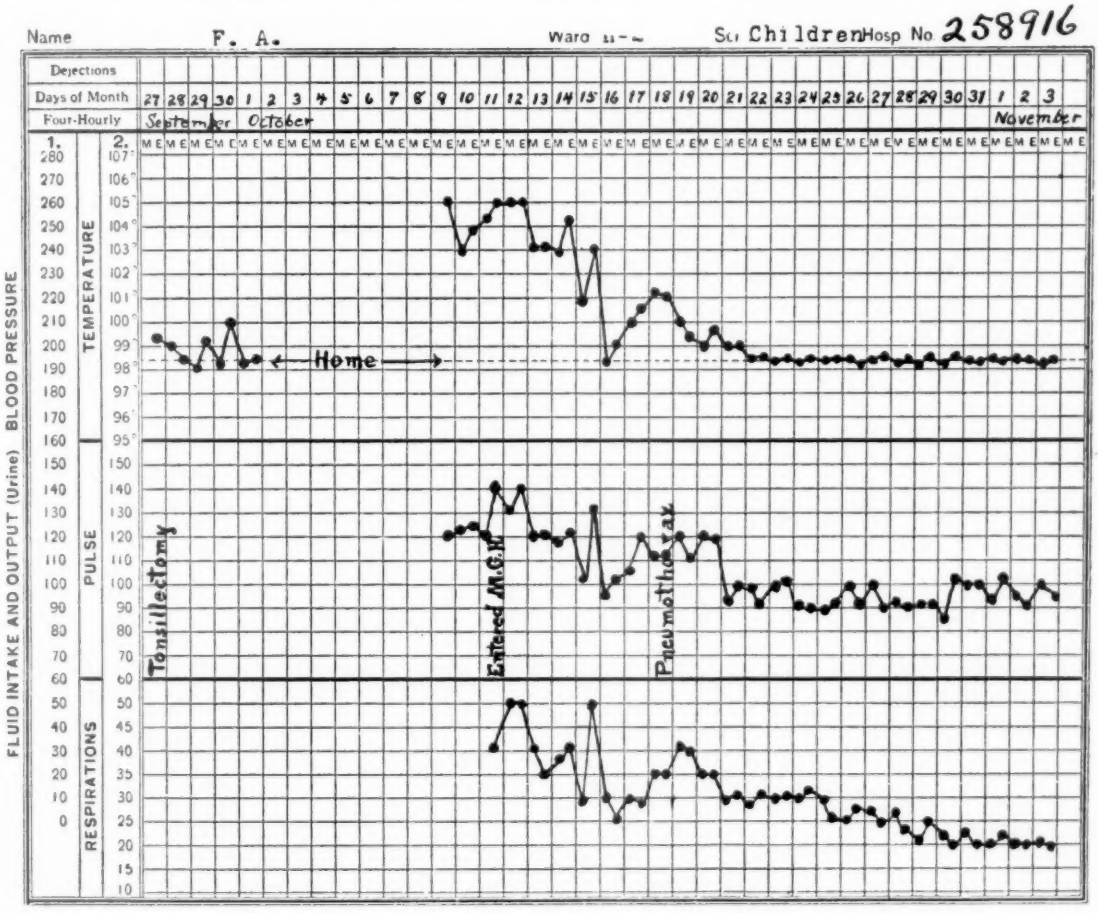

FIG. 1. Combined charts showing complete course of the disease.

three days after being transferred to the Children's Medical Service of the Massachusetts General Hospital, she had a prolonged coughing spell which terminated in the expectoration of two ounces of brown, purulent sputum. A diagnosis of lung abscess with rupture into a bronchus was then established, and an X-ray taken on the following day (Fig. 2) showed in the dull area at the base of the left lung a large cavity with a fluid level which shifted with change of posture.

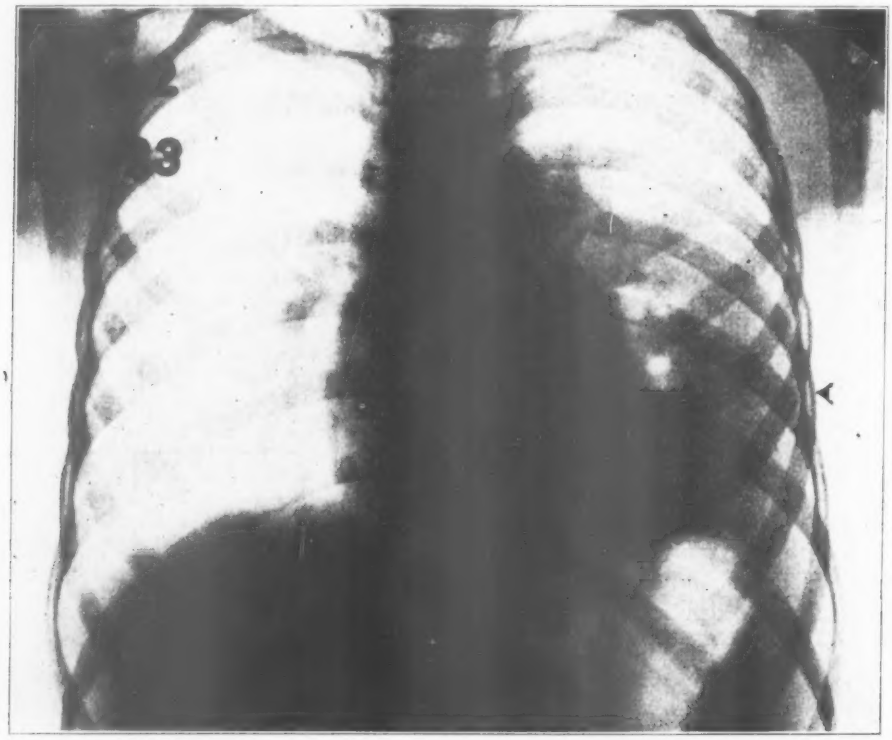

FIG. 2. Abscess cavity with fluid level at left base.

Following the rupture into a bronchus the temperature temporarily dropped, but no other signs of improvement were noted, and the patient continued to raise six to eight ounces of foul, purulent sputum a day.

On Oct. 18, the child was seen in consultation with Dr. Fritz Talbot and Dr. Wyman Whittemore. She was very ill, having an almost constant distressing cough. The temperature was rising after the temporary drop, and there was a leucocytosis of 20,600. It was decided to perform artificial pneumothorax, and that afternoon 450 cc of air were injected into the sixth interspace in the left anterior axillary line. The administration was difficult on account of crying, but otherwise uneventful.

The following day the temperature had fallen, the cough had markedly abated and the sputum amounted to only an ounce and a half. An X-ray plate (Fig. 3) showed the lobes of the left lung partially collapsed, the upper considerably more than the lower. A large bright area in the center of the collapsed lung marked the abscess cavity.

The original plan was to give a second injection on October 21st, but at that time the cough had nearly disappeared, and the sputum was negligible, so no further treatment was carried out. During the next few days the cough and sputum entirely ceased, the temperature remained normal, the leucocytosis disappeared, and the child was soon up and playing about the ward.

An X-ray taken on November 2 showed a completely re-expanded left lung with only slightly increased density at the root, and of the bronchial branches; but very little more than on the right side where there was also increase of the shadows of the larger bronchi.

She was discharged from the hospital on Nov. 4, and has continued well to date. A further X-ray on Nov. 22 confirmed the re-expansion and negative lung fields.

LITERATURE

Tewksbury (1919) records the successful recovery of a boy of seven with a post-tonsillectomy abscess of the right lung. Artificial pneumothorax was instituted eighteen days after the operation, and a permanent cure was established by five injections.

Rist (1919) reports the case of a five year old child with an abscess cavity at the base of the left lung treated for eight months with complete collapse. The recovery was complete and five years later the child was operated upon under general anaesthesia for appendicitis with a convalescence free from any pulmonary complications.

Gilbert (1920) successfully employed pneumothorax in the treatment of a child eight years of age with an abscess of the lower lobe of the right lung caused by the aspiration of a tooth. This case received several injections of air in amounts varying from 200 to 250 cc over a period of three and a half weeks to collapse the lung. Re-expansion was permitted under careful X-ray examination at the end of eight weeks,

and the child is reported as well two months later.

COMMENT

J. B. Murphy (1898) clearly formulated the principles underlying the use of collapse therapy, basing his statements on the employment of pneumothorax in tuberculosis and on theoretical grounds. He states, "I am convinced that ab-

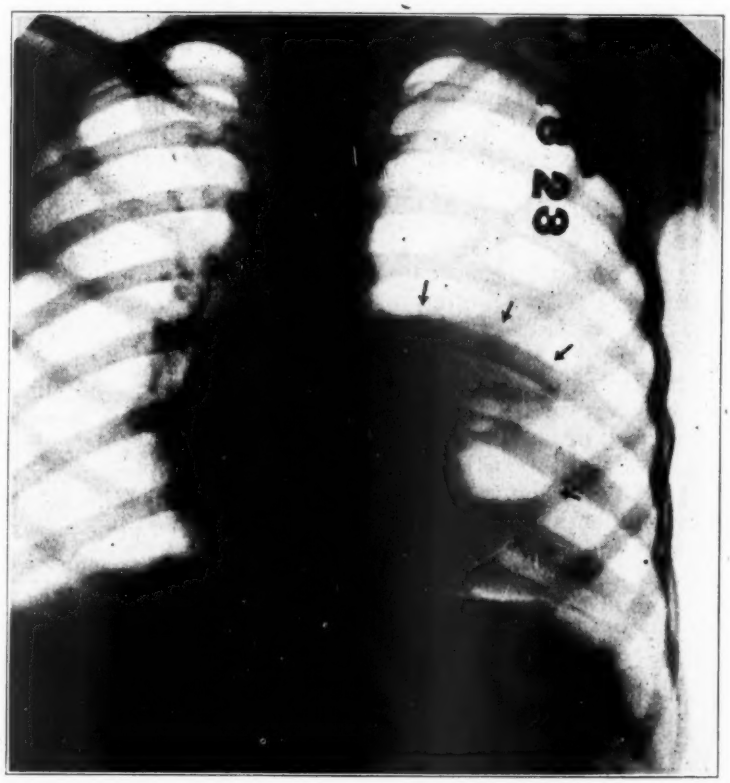

FIG. 3. Artificial pneumothorax. Arrows mark lung border.

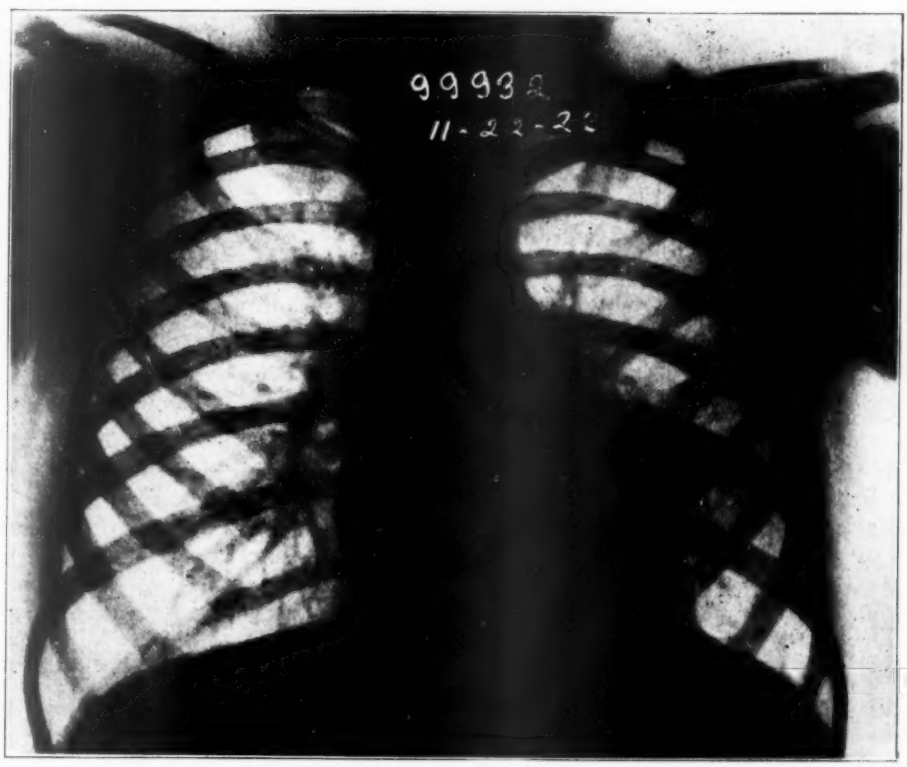

FIG. 4. Complete re-expansion after a month, with essentially negative lung fields.

scesses without adhesions, and with bronchial communications, should not be treated by incision and drainage through the chest wall, but by producing collapse of the lung by injecting nitrogen gas or a liquid into the pleural cavity, thus compressing the lung and allowing the connective tissue in the wall of the abscess to contract and obliterate the cavity with the aid of the bronchial drain. . . . Allow the wall of the abscess to collapse, to empty thoroughly, and it will heal as other abscesses of the same pathologic character; this I believe is the keynote to the successful treatment of pulmonary cavities."

Pulmonary abscess is an unusual occurrence in children notwithstanding the large number of tonsillectomies which are performed early in life. Of one hundred cases of lung abscess treated by pneumothorax which we have collected from the literature, only three have been in patients under twelve years of age.

The case reported above differs from the ones cited from the literature in that only one injection of air was given. To be sure, the injection was large and produced almost complete collapse, and this, added to the fact that treatment was instituted within a few days of the rupture into a bronchus, probably explains the prompt cure which resulted. It is probable, however, that in a large majority of cases it would be advisable to maintain the collapse over a longer period of time.

The two essential conditions for the successful application of pneumothorax therapy are a free pleural cavity, and communication of the abscess with a bronchus. In order to insure the former, the injection should be given as early as possible in the course of the disease, before pleural involvement has occurred. Delay, in the hope of a spontaneous recovery, will almost surely preclude the use of pneumothorax.

SUMMARY

A case of post-tonsillectomy abscess in a child was completely cured by artificial pneumothorax instituted very early in the course of the disease.

Three other cases of pulmonary abscess in children cured by collapse therapy are cited from the literature. It is important to employ artificial pneumothorax early in the course of pulmonary suppurations before pleural adhesions preclude complete collapse.

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The Incidence of Infections in Hypertension*

BY WILLIAM G. WALKER, M. D. AND JAMES P. O'HARE, M. D.

[From the Medical Clinic of the Peter Bent Brigham Hospital

The belief that infections play an important part in the causation of hypertension seems fairly widespread. Many writers have referred to them in discussing the etiology of this common condition. Most of the references to the relation between infections and hypertension are merely casual statements. Few offer any statistical evidence for their conclusions.

In 1905 Thayer[1] reported the results of his examinations of one hundred eighty-three individuals who had previously had typhoid fever. He found that fifty-four had a systolic blood pressure of 160 mm. Hg. Twenty-seven had blood pressures over 180 mm. Hg. and ten of these twenty-seven had blood pressures of 200 or over. Of two hundred and seventy-six supposedly normal controls, ten had blood pressures over 160. One of the two hundred and seventy-six controls had a blood pressure of 180.

To make his data even more accurate, Thayer removed from his "old typhoid" group those cases that gave a history of previous serious illness that might have been responsible for the production of a hypertension. He also did the same with his control cases. The results are given in the accompanying table which is copied because of its great interest.

Old Typhoids

1-10	10-20	20-30	30-40	40-50	50-60	60-70
113.2 mm.	134.9 mm.	152.2 mm.	169.9 mm.	168.7 mm.	183.5 mm.	215 mm.
4 cases	28 cases	32 cases	24 cases	8 cases	2 cases	1 case

Healthy Individuals

1-10	10-20	20-30	30-40	40-50	50-60	60-70
105.5 mm.	128.3 mm.	135.1 mm.	139.8 mm.	145.2 mm.	156.4 mm.	180 mm.
32 cases	62 cases	52 cases	19 cases	11 cases	4 cases	1 case

Allbutt[2], in commenting on Thayer's work, states that those old typhoids with enlarged hearts and increased blood pressures must have been complicated with renal or other disorders,

*This article is number 5 of a series of studies in metabolism from the Harvard Medical School and allied hospitals. The expenses of this investigation have been defrayed in part by a grant from the Proctor Fund of the Harvard Medical School for the Study of Chronic Diseases.

and remarks that many of these cases had normal blood pressures. Inasmuch as we are of the opinion that most of our cases of chronic nephritis with hypertension are secondary to a previous vascular hypertension, we do not feel that Allbutt's references to the renal complication is of great weight.

Barach[3] also mentions typhoid as one of the probable antecedent factors in hypertension. The percentage incidence of this disease is very striking in his cases. His list of the past infections in 68 cases of vascular hypertension is reproduced here.

	No. Cases	Percentage Incidence
Typhoid fever	28	41.18
Tonsillitis (recurring)	16	23.53
Scarlet fever	9	13.24
Diphtheria	8	11.77
Rheumatic fever	5	7.35
Malaria	5	7.35
Syphilis	3	4.41

Barach remarks that "in a previous communication on the etiology of cardiovascular affections, a definite relationship was established between cardiac involvement and a pre-existing typhoid fever, tonsillitis, diphtheria, pneumonia and rheumatism. It is perfectly obvious that a similar relationship can exist here." The small number of syphilitics also is worthy of note in his cases.

Moschowitz[4], writing on hypertension, states, "I recall patients, for instance, whose malady seemed directly traceable to syphilis, to lead, and to scarlatina."

Warfield[5] says, in discussing hypertensive cardiovascular disease, that in fifty cases, ninety percent either had a positive Wasserman reaction or luetin test or had children with hereditary syphilis.

Ambard[6], in a statistical study of 100 hypertensive cases, found seventy-eight with syphilis. Stoll, (quoted by Vaquez) in fifty observations, found ninety percent with syphilis either from signs of congenital lues or from the story of infant monstrosity, or from a Bordet-Wassermann reaction. In twenty-eight cases of hypertension, Castigan (quoted by Vaquez) found the serum reaction positive, or the presence of evident stigmata of acquired syphilis seventeen times. The large number of luetic cases found by these authors is indeed striking and in great contrast to our findings.

TABLE I

		Normal B. P. cases		Hypertensive cases		Vascular hypertensive cases		Chronic nephritis and hypertension	
	Number of cases	400		400		246		154	
		No.	%	No.	%	No.	%	No.	%
A.	Measles	267	66.75	272	68	176	71.54	86	62.47
	Whooping cough	203	50.75	156	39	99	40.24	57	37.01
	Mumps	174	43.5	154	38.5	106	43.09	48	31.17
	Chickenpox	123	30.75	119	29.8	81	32.93	38	24.68
	Scarlet fever	87	21.75	100	25.0	64	26.02	36	23.38
	Diphtheria	79	19.75	48	12.0	29	11.79	19	12.34
B.	Teeth and gums	315	78.75	373	93.3	225	91.46	148	96.1
	Influenza	70	17.50	82	20.5	48	19.51	34	22.08
	Acute arthritis	30	7.05	64	16.0	36	14.63	28	18.18
	Typhoid	22	5.5	71	17.8	47	19.11	24	14.28
	Chronic endocarditis	19	4.75	28	7.0	16	6.5	12	7.14
	Abscess	15	3.75	16	4.0	5	2.03	11	7.14
	Smallpox	12	3.00	14	3.5	9	3.66	5	3.25
	Appendicitis	9	2.25	11	2.8	5	2.03	6	3.57
	Chronic arthritis	3	0.75	42	10.5	33	13.41	9	5.85
C.	Sore throat	203	50.75	184	46.00	112	45.53	72	46.76
	Syphilis	117	29.25	42	10.5	33	13.41	9	5.87
	Gonorrhoea	95	23.75	64	16.0	35	14.23	29	18.83
	Bronchitis	66	16.5	45	11.3	25	10.16	20	12.99
	Pneumonia	51	12.75	47	11.8	29	11.79	18	11.69
	Malaria	48	12.00	44	11.0	31	12.60	13	8.44
	Otitis media	35	8.75	24	6.0	13	5.28	11	7.14
	Miscellaneous	35	8.75	33	8.25	15	6.09	11	7.14
	Pleurisy	33	8.25	22	5.5	10	4.07	12	7.49
	Asthma	18	4.5	1	0.25	1	0.41	0	0.0
	Tuberculosis	16	4.0	6	1.5	4	1.63	2	1.3
	Jaundice	13	3.25	8	2.0	3	1.23	5	3.25
	Hay fever	8	2.0	4	1.0	1	0.41	3	1.19
	Cholecystitis	8	2.0	4	1.0	2	0.82	2	1.3
	Erysipelas	5	1.25	2	0.5	2	0.82	0	0.0
	German measles	5	1.25	2	0.5	1	0.41	1	0.65

Vaquez[7] says that all the infections capable of provoking nephritis may terminate by means of the latter in the hypertensive process, and states that this is especially so of scarlet fever,

ordinary tonsillitis, syphilis, and even tuberculosis.

Lichtvitz[8] gives syphilis as a cause of hypertension, while McElroy[9] says that syphilis occurred relatively infrequently in his hypertensive cases. The Wassermann reaction was positive in only five of his one hundred cases.

Allbutt[10] states that grievous and extensive as syphilitic arterial disease may be, in none, unless complicated by renal or other factors has he seen blood pressures above normal.

For a long time we have been doubtful about any etiological relationship between infections as a whole and hypertension. We have felt, too, that most authors, except Thayer, have given too little attention to the incidence of infections in the average run of patients without hypertension. We have felt that an investigation of the past infections in a fairly large series of hospital patients, both those with hypertension and those with a normal pressure, might be of value. Therefore we have made a study of the comparative incidence of past infections in 400 unselected hospital patients with normal blood pressures and 400 with hypertension. The results of our study are shown in Table I. In the first column is given the findings in the controls and in the second the findings in the hypertensive cases as a whole. For interest we have divided this group into its two component parts (vascular hypertension and chronic nephritis) and have listed our findings in the third and fourth columns.

Having observed that the great majority of the hypertensive cases were thirty-five years of age or older, and that many of our control cases were younger than this, we eliminated all the normal blood pressure controls who were under thirty-five. We then compared their past infections with those of the hypertensive individuals. Where any noteworthy change from the figures in Table I was found, it was indicated in Table II. Where no change was noted the incidence given in Table I is correct.

For purposes of convenience the diseases listed in Table I have been divided into three groups, A, B, and C. Under A appear the ordinary diseases of childhood. Under B are those diseases in which the incidence is greater in the combined hypertensive group (vascular plus chronic nephritis) than in the normal group. This relation in section B holds good also for the separated chronic nephritis subgroup, and in all but two instances (abscess and appendicitis) in the vascular hypertension group. The variation here is very slight. In the last section C appear those diseases which occur more commonly in the control than in the active hypertensive cases. This relationship persists in the sub-groups throughout except in the case of malaria, in which disease the incidence is a fraction of a percent greater in the vascular hypertensive group than in the controls.

Let us consider the diseases of childhood. It is hard to conceive that any of these—occurring as they do before ten years of age—can have much to do with the development of a process which starts around thirty-five or forty years. Nephritis does follow such diseases as scarlet fever and diphtheria but patients with such a nephritis are usually dead before thirty-five. However, it may be of value to look at our statistics. It will be seen by reference to Table I that the incidence of measles is practically the same in the controls and in the hypertensive cases grouped together. However, the incidence in the vascular hypertension cases is over 4% greater, and in the chronis nephritis cases is 4% less than in the controls. Comparing cases of similar ages, (Table II) the incidence of measles is greater in all the hypertensive groups than in the normal blood pressure group. In Table I whooping cough, mumps, and chicken pox are more common in the control cases. In Table II, however, there is actually slightly greater incidence of these diseases in the vascular hypertension group. Scarlet fever, too, occurred somewhat more often in the high blood pressure cases. Diphtheria alone has a greater incidence in the normal cases than in the hypertensive cases. The degree of difference in the incidence of these diseases is slight except in measles where it is thirteen percent. Such findings probably mean little or nothing.

It may be that the occurrence of these ordinary diseases, in an individual already suscep-

TABLE II

	Normal B. P. cases 35 years or over		Hypertensive cases		Vascular hypertensive cases		Chronic nephritis and hypertension	
Number of cases	255		400		246		154	
	No.	%	No.	%	No.	%	No.	%
Measles	137	58.3	272	68	176	71.54	96	62.47
Whooping cough	86	36.6	156	39	99	40.24	57	37.01
Mumps	89	37.87	154	38.5	106	43.09	48	31.17
Chickenpox	64	27.23	119	29.8	81	32.93	38	24.68
Teeth and gums	211	89.79	373	93.3	225	91.46	148	96.1
Malaria	30	13.74	44	11.0	31	12.60	13	8.44
Smallpox	11	4.68	14	3.5	9	3.66	6	3.57

tible to hypertension by heredity, render him slightly more susceptible. In section B of Table I there are four diseases only, in which the difference in incidence is enough to be noteworthy. These are teeth and gums, typhoid fever, and acute and chronic arthritis. In the case of the other diseases the variations from the controls is so slight that it can be of no importance. Reference to Table II will show that in the case of teeth and gum involvement, comparison of similar age groups makes the difference here slight. More years have been allotted in which to develop these infections.

Coming now to Group C the only impressive difference is in the incidence of syphilis. The difference seen in the other diseases is not remarkable. The number of luetic cases is almost three times as great in the control group as in the entire hypertensive group. This is in marked contrast to many of the references given above.

CONCLUSION

Statistics such as these do not take into account the severity of given infections and the probably greater effect of such severe infections. However in a series such as ours such variables are more or less equalized. From the results obtained in this series of 400 control and 400 hypertensive cases we can say that the relative incidence of the various infections in the past histories of these patients does not indicate that infections play a very important part in the causation of hypertension. It is possible to infer that the greater incidence of measles and acute and chronic rheumatism in the hypertensive cases indicates the greater susceptibility of such patients to the development of hypertension. The relatively high incidence of typhoid fevet in Thayer's, Barach's, and our cases is noteworthy and may mean that this disease actually plays a part in the production of hypertension. The far greater incidence of syphilis in our control cases than in our hypertensives is particularly noteworthy because of the prominent part ascribed by some to this disease in the causation of high blood pressure.

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Carbon Dioxide Treatment in Acute Alcoholic Intoxication*

PRELIMINARY REPORT

BY F. T. HUNTER AND S. G. MUDD

(From the Laboratories of the Massachusetts General Hospital and the Boston City Hospital, Boston.)

Haggard, Colburn and Henderson[1] and White[2] have demonstrated that carbon dioxide administration will quickly de-etherize patients after operation. This is based on the well known fact that gases tend to assume equal partial pressure between the blood and the lung alveoli, and that an increased ventilation of the lungs, by lowering the partial pressure of the gas in the alveoli, favors the diffusion of the gas from the blood outward. Not only does this law of partial pressure hold true for gases, but it may be applied as well to volatile liquids such as acetone and alcohol. In a recent interview with Y. Henderson he suggested that as Haggard believes that an appreciable quantity of the alcohol ingested is excreted by the lungs, carbon dioxide administration should theoretically cause a rapid sobering in cases of acute alcoholic intoxication.

To test out this hypothesis the following experiments were performed: (1) Carbon dioxide was administered to cases of acute alcoholic intoxication and the sobering effect was noted clinically. (2) A laboratory experiment was performed on a human subject in which the blood alcohol was quantitated at intervals after the ingestion of a given amount of alcohol. The experiment was repeated with the administration of carbon dioxide during certain periods after ingestion of the same quantity.

*The expenses of this investigation have been defrayed by the Tutorial Fund of the Harvard Medical School.

I. CLINICAL APPLICATION OF CARBON DIOXIDE ADMINISTRATION

In the Accident Ward of the Boston City Hospital carbon dioxide was administered in cases brought in on account of acute alcoholic intoxication and the effects were noted clinically. The apparatus used was in all respects identical with that described by Henderson and Haggard[1] and used by White[2] for de-etherization, consisting of a tank of carbon dioxide, a reducing valve, a water bottle to regulate the flow of gas, and an open slot mask. The latter is so constructed that the room air on being inspired is increased in carbon dioxide content by a steady stream of the gas, and the expired air containing alcohol vapor is blown out into the room through a slot in the mask. The effect of this is to increase the pulmonary ventilation with a rapid lowering of the tension

of alcohol in the alveoli. Respiratory tracings were taken on a new type of spirograph (soon to be described). These showed that during carbon dioxide administration when the respiration rate was 20-24 per minute the total lung ventilation was increased from four to eight times the normal, the effect being due more to an increase in the volume per breath than to an increased rate. In place of the mask described, the hands or a small cardboard box with a slot in it held loosely over the face will serve the same purpose. A summary of the clinical notes on four cases is here presented.

Case I. An unknown white woman about 40 was brought into the Accident Ward by the police at 10:15 p. m. When seen at 10:30 she was in deep coma, could not move, speak or be aroused in any way by shaking, pinching, or by intense supra-orbital pressure. There was considerable cyanosis of the face. The pulse averaged 122 and was poor and thready in character. Respirations were quite shallow.

At 10:48 carbon dioxide administration was begun and continued for thirty minutes. Within a few minutes the pulse had dropped to 84 and was of good quality. When the carbon dioxide was discontinued the patient on questioning gave her name correctly and made profane remarks. On further questioning she became uncoöperative and said, "Leave me alone."

At the end of six minutes (11:25) administration was recommenced and continued for eighteen minutes. Immediately after removing the mask, she was still uncoöperative and profane, but in a few moments she gave her address and voluntarily opened her eyes.

After forty-four minutes (12:27 a. m.) carbon dioxide was again administered for seventeen minutes. At the end of this period (12:44) the patient was quite coöperative, called those about her by endearing names and asked for a drink of water and something to eat. On attempting to walk she could do so only with marked staggering. She was sent to the ward a moment later in a happy frame of mind and apparently well oriented.

On the following day there was no recollection of the preceding night, she had had no vomiting and had eaten a hearty breakfast. No medication was given.

Case II. E. M., age about 30, was brought into the Accident Ward at 1:30 a. m. by three policemen. He was fighting and swearing, resisted efforts to undress him and had to be restrained. Within a few moments he passed into a deep coma.

At 3:14 a. m. there was no response to shaking or supra-orbital pressure. Carbon dioxide administration was then begun and continued for thirty minutes. During the middle of the administration the patient began swearing and struggling and had to be held down. When the mask was removed at 3:46 he gave his name, address and occupation.

Twelve minutes later (3:58) administration was started again and continued for fifteen minutes with the patient quite coöperative. Ten minutes after the removal of the mask he was quite sober, remorseful and swore off liquor; he asked where he was and how he had gotten there. To all appearances he could have been discharged.

On the following day he remembered trying to shake off the mask during the first period of carbon dioxide administration and all the subsequent events. He stated that he felt better than usual. There had been no "hang-over," nausea or vomiting, which, judging from his past experiences he should have had. No medication was given.

Case III. O. H., a man of about 50, was brought in by the police at 7:10 p. m. When seen he was in deep coma and supra-orbital pressure gave no response.

At 7:24 administration of carbon dioxide was begun and continued for thirty minutes. A moment after removing the mask the patient raised his head and tried to whisper his name in answer to questions. When asked if he was cold he nodded his head and opened his eyes. Within a few minutes he was able to answer questions as to his name, occupation, etc., although his speech was very thick.

At 8:07 carbon dioxide was started again and continued for fifteen minutes with the coöperation of the patient. On removal of the mask he responded poorly to questions, but ten minutes later he was talkative and in a good humor. By this time his speech was more distinct; he told of his wife and family, details of his past, smoked a cigarette and walked with a moderate stagger.

At 8:48 carbon dioxide was recommenced and continued for fifteen minutes. At the end of this period he sat up, was talkative and in high spirits and wanted to go home.

On the following day he stated that there had been no nausea or vomiting but that he never had such symptoms after debauches. He remembered none of the events of the previous night. No medication was given.

Case IV. H. F., age about 40, was brought in by the police at 2:15 a. m. There was a bleeding cut over the left eye. He talked stupidly and with a thick speech, but was able to answer questions as to name and address.

At 2:35 carbon dioxide was started and continued for twenty-eight minutes. At the end of this period he was quite talkative and spoke more distinctly, although there was a tendency toward a flight of ideas. He sat up and was quite coöperative and fairly intelligent.

At 3:25 carbon dioxide was again begun and administered for fifteen minutes. After the mask was removed the eye wound was dressed

causing him considerable pain. He was soon sent to the ward still intoxicated but far brighter than on entrance.

On the following day he had a vague recollection of the mask, but had no remembrance of the other events of the night. There had been no nausea or headache, but these were usually absent after previous debauches. No medication had been given.

There are several noteworthy features in these cases. Firstly, it seemed that a slight narcosis was caused by the administration of carbon dioxide; in some patients excitement was diminished by the inhalations, in others the degree of mental clearness was obviously less immediately upon removal of the mask than after a few minutes had elapsed. This was quite noticeable in case II. Secondly, the relative amount of improvement was more marked in those patients in deep coma than in those who were responsive, and lastly, we might mention that in all the treated cases shivering and muscular twitchings occurred, due, in all probability, to a rapid loss of heat through the lungs.

II. CONTROLLED LABORATORY EXPERIMENT

Miles[4] has shown that after the ingestion of a given amount of alcohol the curve of the blood alcohol concentration shows an early rise to a maximum with a subsequent gradual decline. We have repeated his procedure in one experiment and achieved the same result. A few days later, on the same subject, and under the same conditions, the experiment was repeated, but this time carbon dioxide was administered during certain periods after ingestion of the alcohol to see whether or not it would produce a sharper decline in the blood alcohol concentration. The results are plotted in Fig. I, the solid line representing the blood alcohol concentration on the first day when no carbon dioxide was given, and the broken line the concentration on the second day when carbon dioxide was administered. The shaded area at the bottom of the chart shows the time during which carbon dioxide was given on this day.

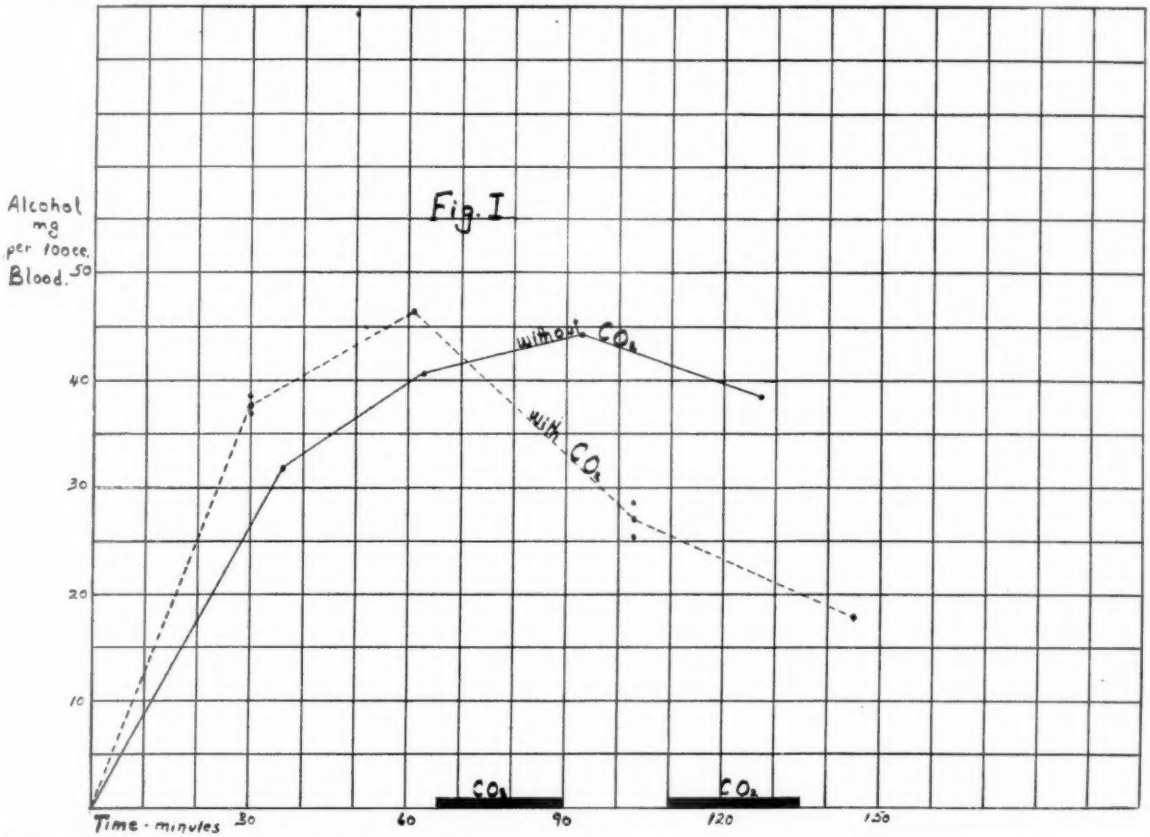

TABLE I

To determine the decrease of blood alcohol after the ingestion of 28cc. of 95% alcohol, with and without administration of carbon dioxide.

Time after ingestion		Blood alcohol mg. per 100 cc.	
Without CO_2	With CO_2	Without CO_2	With CO_2
36 min.	30 min.	31.7	37.0, 38.6
63 "	61 "	40.7	46.5
93 "	103 "	44.4	25.4, 28.7
127 "	145 "	38.7	18.1

It is apparent that the increased ventilation induced by the carbon dioxide caused a more rapid fall in the blood alcohol concentration, and that the rate of fall was less marked at the lower concentrations. The urine alcohol was also quantitated, but the results were not as striking as in the case of the blood and have therefore been omitted. A summary of the experiment follows:

Subject W., an abstainer, volunteered. On the first day, three hours after a breakfast consisting of two slices of toast, a cup of coffee and a glass of milk, the subject drank 28 cc. of 95% alcohol mixed with 22 cc. of "Five Fruit Juice" and diluted with water to make 150 cc. At intervals of approximately thirty minutes 7 cc. samples of blood were taken from the cubital vein and the urine was passed, measured, and a sample kept for analysis. During this experiment the subject moved about the laboratory to some extent but remained seated most of the time.

On the second day, three hours after the same breakfast, the subject drank the same amount, but on this day he reclined on a couch and did not move about. There was no water taken on either day between breakfast and the beginning of the experiment. Blood and urine samples were taken as before. One hour and six minutes after the ingestion of the alcohol carbon dioxide administration was begun and continued for twenty-four minutes. After an interval of twenty minutes administration was again started and continued for twenty-five minutes. The time of taking the blood samples in both experiments is indicated on the chart Fig. I. In the first experiment none of the blood figures were checked; in the second experiment the first and third samples were checked and the points on the chart are averages.

The curves need little discussion. The greater rise on the second day (dotted line) is probably due to two facts. First, the subject's respirations were less, and second, he was burning less alcohol, on account of the fact that on the first day he moved about while on the second day he was lying down the entire time.

The method for the determination of blood alcohol was the modification of the Widmark-Nicloux technique described by Miles[4]. It consists in the distillation of the alcohol from the blood into a sulphuric-acid bichromate mixture, and the excess bichromate unreduced by the alcohol is titrated off with a known alcohol solution to match a standard color. As the titration must be done at a high temperature we have found it convenient to place the unknown (after distillation) and the standard in a beaker of boiling water in front of a colorimeter light. The two test tubes may be held side by side by appropriate clamps. Stirring of the unknown may be effected by introducing a fine capillary glass tube along the side of the test tube, reaching to the bottom of the solution, and bubbling air through it with a rubber syringe bulb. This obviates the necessity of removing the burette in order to stir the solution after each addition of alcohol.

SUMMARY

1. Carbon dioxide administration, to increase the pulmonary ventilation, has been tried on four cases of acute alcoholic intoxication with a rapid revival from coma. Lesser degrees of intoxication did not show such striking improvement.

2. An experiment was performed which apparently showed that the alcohol in the blood may be lowered more rapidly by the increased lung ventilation from carbon dioxide administration than would be the case without it.

CONCLUSIONS

Inasmuch as the majority of deaths from alcoholism at the present time result from the ingestion of lethal doses of alcohol and not from particular poisons in the beverage, it is suggested that carbon dioxide administration would be of value in the treatment of all cases of alcoholic coma. In cases of methyl alcohol poisoning carbon dioxide would be even more efficacious, as, due to its lower boiling point, it has a higher partial pressure than ethyl alcohol, both being at the same concentration.

For assistance and suggestions concerning the laboratory work we are deeply indebted to Dr. James Stoddard. To Dr. Peabody and the members of the staff of the Boston City Hospital we wish to express our appreciation of the courtesies extended to us. And to Dr. Bock who arranged for the purchase of apparatus and to the subject who so willingly coöperated we extend thanks.

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FORD MAY BREAK OUR BONES with his flivvers, but he should not be allowed to repair them in a hospital whose methods "resemble nothing so much as a garage and repair shop where human machines are overhauled like automobiles." So thinks the Detroit Academy of Surgery, which condemns the new Ford Hospital in Detroit because—among other things—it refuses to take charity patients, because it demands uniform fees instead of the sliding charges by which doctors are accustomed to let the well-to-do help pay for the medical care of the poor, and because the institution refuses to allow any but its own house physicians to treat patients. These are all good reasons, but in the background lurks another which is even better. Obviously in the Ford Hospital control is in the hands of business men, and the physicians have become merely laborers. Our medical societies are among the oldest and strongest labor unions in existence. They preserve to a fine degree the old craft system by which an industry is controlled by its craftsmen, not by investors and business executives. They have a spirit of service and a code of ethics that are almost unmatched in any other walk of life. No, we have no wish to see medicine 'Fordized—and flivvered.—*The Nation.*

A Record of Some Recent New Hampshire Poisonings. With an Observation Concerning Possible Failure to Detect the Presence of Cyanides

BY CHARLES D. HOWARD, CONCORD, N. H.

THE object of this paper is to present a history of poisonings and attempted poisonings of man, both criminal and accidental, which have been encountered by the writer during the course of his twenty years' connection as chemist of the New Hampshire Board of Health. In addition to the interest which such cases must have for all medical men, it is believed that some of these are worthy of record in the annals of toxicology.

While the state medical referee law providing for the making of toxicological examinations at the laboratories of the state board of health was not enacted until 1919, it had been the custom for a considerable time prior to this for the prosecuting officers to so refer cases into which a question of poisoning entered, which fact has involved many examinations with negative findings.

Formerly, unless distinctly suspicious circumstances were involved, no pathological investigation was apt to be made, but of recent years the practice has tended to become established here, as elsewhere, of performing an autopsy not only in every case where death is not definitely known to have been due to so-called natural causes, but in those instances where criminal liability may be involved, and this fact has been responsible for a corresponding increase in the number of chemical examinations.

Under the New Hampshire law, murder by poison is always of the first degree and the penalty therefor is capital punishment if the jury so recommends; otherwise life imprisonment is imposed. Nearly always, however, the evidence in trials alleging murder by poison is necessarily circumstantial in character. Even where the crime can be fastened upon any person—and apparently in some of the cases here cited it was believed it could not be—the securing of convictions is at best a much more difficult matter than is true of murder by other methods, and there would be room for question if the provision of the New Hampshire law which is designed to provide for the death penalty only in the more heinous cases is not actually calculated to result in acquittals, because of an ineradicable association in the mind of the average juryman of hanging with conviction. Anyone who witnesses the drawing of a jury in such connection cannot but be impressed that comparatively few men are today willing to vote to impose the death penalty.

As with criminal poisoning cases usually, so through most of these here recounted there runs a tale of illicit love, of affections unrequited, of jealousy and revenge. Were there to be added to these those instances coming to our attention where one person has suspected another but where no evidence of crime actually existed (usually monomaniacal derangement) the list would be long indeed.

Case 1. State v. Comery. In November, 1914, Bertha Comery, the wife of a Manchester chauffeur, died following a sudden and violent illness of about two hours' duration. Because of certain suspicions entertained by the woman's spiritual adviser, the embalmed body was exhumed eighteen days after burial, an autopsy performed and the organs, consisting of stomach, liver, kidneys, heart, spleen and brain, together with some cavity fluid and a bottle of the embalming fluid used, were submitted to the writer. The autopsy disclosed nothing suspicious and there was nothing noticeable at that time about the appearance of the stomach, liver and kidneys to suggest death from poisoning.

Strychnine was found equivalent to 0.89 grains as base, or 1.15 grains as sulphate, distributed as follows:

Organ	Weight, grams	Alkaloid, milligrams
Stomach and contents	240	29.6
Liver	1060	15.9
Kidneys	190-188	6.0
Heart	245	3.0
Spleen	155	1.3
Fluids	—	2.3

The husband, who at the time of the autopsy was arrested just as he was on the point of leaving the state, was said to have confessed when the analytical findings were communicated to him by the police. Subsequently he repudiated his confession but on the eve of trial attempted suicide by cutting his throat. At the trial it appeared that he had desired to get rid of his wife (then pregnant) in order to be free to marry a school-girl, also pregnant by him; that he had purchased of a local druggist five grains of strychnine sulphate for the avowed purpose of killing a "large" dog; that he brought this poison to his wife in the bathroom, recommending that she take it then and there as a laxative, and that he then went to the cellar to await the outcome. Subsequently he returned and called a physician, who diagnosed the ailment as acute indigestion. The verdict of the jury recommended capital punishment, and this was imposed.

Usually in trials of this character where the body has been embalmed the defense will seek to raise a question concerning the possible introduction of the poison through the fluid used. In this respect the New Hampshire law is defective in that, while it forbids embalming the

body of any person dying under suspicious circumstances pending results of a legal investigation to determine the cause of death, it does not, like many other states, place any restrictions upon the nature of the ingredients which may enter into the composition of such fluids. At the present time the latter in practice do not include such salts as those of arsenic or mercury, nor is there the slightest need of these, reliance properly being based chiefly upon formalin and boric acid. In the above mentioned case the preparation purported to consist of alcohol, formaldehyde, boric acid, oils of cinnamon and eucalyptol, creosote and eosin color.

Case 2. During August 1915, at Peterborough, a child sixteen months of age died in convulsions very soon after having swallowed a number of tablets representing a proprietary remedy known as "Stuart's Calcium Wafers." The latter were labeled as being "perfectly safe"; "contains no poisonous ingredients"; "can be safely used by any person, man, woman or child, with perfect assurance that no possible injury can result." Organs submitted included heart, liver, stomach and one lung, and a small amount of vomitus. From the stomach and contents one-eighteenth grain of strychnine was isolated, and this substance was also detected in the liver and vomitus. Analysis of the tablets showed these to contain 1/130 grain strychnine.

Because of the obvious misbranding under the Food & Drugs law this matter was referred to the federal department, which effected a large number of seizures of this product throughout the country.

Case 3. Death near Manchester, in January 1917, of a farm-hand following an illness of about six hours, which was characterized by numerous convulsive attacks, with pain in the stomach and back, constant thirst, cyanotic face and great rigidity, the first attack having come on about 11 P. M. following awakening from two hours sleep. This man, who was said to be subject to epileptic fits, had eaten very heavily and unwisely that evening, and the attending physician was probably quite correct in his diagnosis of the cause and character of the spasms.

The interesting feature in this case is that on the day following death there was discovered in the drawer of a table near the bed an unlabeled half-pint liquor flask nearly full of what upon analysis proved to be a saturated solution of strychnine sulphate, the presence of which poison was not explained in any subsequent correspondence which the writer had with the authorities. Today, in view of the other circumstances, such a finding would be made the ground for an autopsy and analysis.

Case 4. Paris green in canned blueberries. During 1908 there was forwarded from Warren a jar of blueberries said to have been one as brought up from the stock in the farm-house cellar. Attention happened to be attracted by a bit of twine protruding from underneath the jar cover (evidently a marker) and a green sediment was then noticed. The latter proved to be Paris green, present to the amount of an ounce or so. Nothing further learned.

Case 5. Paris green in spring. Sample of water so impregnated taken from a spring near Concord in 1912. No knowledge as to action taken.

Case 6. Paris green in coffee. Specimen of prepared coffee containing Paris green submitted in 1911 from Plymouth. Said to have been part of a lunch as prepared by the wife of a wood-chopper. While the state's allegation was that the woman and another man had conspired to murder the husband, the grand jury found no indictment.

Case 7. Paris green in maple sap. The owner of the orchard, a Bradford farmer, on visiting his sap-buckets one morning (1910) noticed a greenish sediment in one of these, which proved to be Paris green. The identity of the perpetrator was not determined.

Case 8. Lead arsenate in well. During August 1911 water submitted from a farm well at Northwood contained a sediment identified as lead arsenate. The guilt was fixed upon a farm-hand, the allegation being that because of refusal of the farmer to bestow his daughter in marriage, this method of getting even had been taken. A sentence of fifteen years in state prison was imposed.

Case 9. Lead arsenate in flour. In September 1921 three members of a Concord family, all who ate of a pie, became violently ill. Examination of the flour used, submitted with other ingredients, disclosed the presence therein of approximately eight per cent of lead arsenate, corresponding to about half a pound of this poison in the five pound portion retailed.

This was taken from the top of a sack, which was one of a lot trucked from Boston; the poison was fairly uniformly distributed, and the absence of dirt, fibres, etc. was such as to discredit added floor-sweepings. Apparently no arsenate had been in the store. At the time of the investigation the balance of the sack had been retailed but no other illnesses were reported. An inquiry by the federal food and drug department afforded negative results. While this case presented a number of mysterious features and it would appear rather unlikely, from the aspects involved, that the poison had entered accidentally, yet the police inquiry developed no grounds for directing suspicion against any of the local parties concerned.

Case 10. Arsenic in candy. During January 1915 the Troy health officer forwarded a box containing nineteen chocolate "drops." These had been brought to a Christmas festival by a woman with the request that the box, marked with the name of a boy, be placed upon the tree

for him. In biting on one of these chocolates the falling out of a white powdery substance caused the mother to be suspicious. The analysis showed that every other piece had been slit apart, the interior scooped out, refilled with white arsenic, and the halves pressed together again. It appeared at the preliminary hearing—at which a capacity audience jammed the local town hall—that the woman suspected the boy's mother of endeavoring to alienate the affections of the sender's husband. She was subsequently adjudged insane and committed to the state hospital.

Case 11. State v. Buchanoski. The decedent, a Polander employed in a tannery at Winchester, died in late December 1914 following an acute illness of three weeks, the symptoms being such as to cause the attending physicians to strongly suspect arsenical poisoning. Following an autopsy there were submitted for analysis the stomach and contents (338 grams), one kidney (205 grams), a small portion of the liver (112 grams) and 110 c.c. of urine. The stomach was highly inflamed; contents (58 grams) dark fluid; kidney showed marked congestion, and there was every appearance of the effects of an irritant poison.

The arsenic estimation was made by the quantitative Gutzeit method, based upon the relative intensity and area of the stain deposited upon paper strips impregnated with mercuric bromide solution and compared against similar stains from known amounts. There is reason to believe that this may have been the first case where this method was accepted without question by the court and the defense, a fact of interest in view of the legal standing which the classic Marsh test has always enjoyed. The analysis showed:

Urine	4.2 mg. per liter, equiv. 1/15 grain
Stomach and contents	0.26 mg., equiv. 1/250 grain
Liver and kidneys (based upon both kidneys and av. weight liver)	4.90 mg., equiv. 1/13 grain
Brain (later submitted)	None

The state's allegation was that the decedent's wife conspired with a man who, the testimony tended to show was her paramour, to take the husband's life through the administration of two one-half ounce portions of Fowler's solution, given within a short interval of each other. In view of the ready absorbability of this compound and the fact that most of the arsenic would have been eliminated during the three weeks' illness it is not surprising that the chemical evidence in support of the state's case, as based upon the residual amounts of arsenic found, was probably not very convincing to the layman, or that the defense, with the assistance of its two chemists and the analysis of such items as the bedding, wall-paper, and even the well-water (!), was able to produce figures seemingly not differing so materially from those of the state's, at least to the minds of men accustomed to think in nothing smaller than pounds and ounces, and to whom all fractions of a grain would not unnaturally suggest about equally minute and insignificant quantities.

Nevertheless it should be observed that the amount of arsenic recovered from the material submitted, although admittedly minute, was much greater than could properly be attributed to traces as impurities ingested with food or drink or through contact with the items mentioned. In reality this was a case where parts of the entire body might well have been subjected to analysis.

At the trial, which extended over two weeks' time, the prisoners were ably defended by four members of the bar, and the testimony of a number of medical experts for the state to the effect that the symptoms and pathological findings pointed to arsenical poisoning was nicely balanced by that of an equal number for the defense to the effect that in reality it was a case of ptomain-poisoning. The result was an acquittal.

Case 12. In 1920 a gardener's helper at Concord was seen by his associate to take a drink from a quart whiskey bottle labeled "Manhattan Cocktails." The victim was said to have immediately crumpled to the ground and almost before the other man could pick him up, had expired. The bottle was found to contain a brownish fluid which on examination proved to be a strong solution of nicotin sulphate, intended, it was said, for killing rose-bugs.

Case 13. The first fatalities from wood alcohol poisoning to be noted in New Hampshire in recent years occurred at Manchester during 1918, when two of three men died as a result of consuming (presumably) amongst them upwards of two quarts of a refined and nearly anhydrous grade of wood alcohol which they were said to have stolen from a manufacturing plant under a supposition that it was grain alcohol. From what could be learned of the facts a gallon jug of this alcohol was brought to the home of one of them on a Wednesday afternoon and the first victim expired during that night. Apparently the condition of the second was not such as to seem to call for medical attention until two o'clock the following Friday morning, when a physician found him manifesting the effects of methyl alcohol poisoning, and death occurred that afternoon. The third man apparently suffered no worse effects than a bad and prolonged condition of intoxication, from which he soon recovered, although there seems to have been no doubt that he also had been partaking of the jug contents.

In the stomach of the second victim, which was submitted for examination, there was found

seven ounces of a dark, coffee-colored fluid (rather typical of alcohol cases), and from this there was no difficulty in isolating methyl alcohol. The stomach membrane was highly inflamed, with much adhering mucous, and the color of the fluid was undoubtedly due in part to blood. Examination of the residual contents of the jug showed this to represent a deodorized methyl alcohol of 98.9 per cent, corresponding to a grade known as Columbian Spirit. Just why such a product should have been used at the factory in question—in fact, how it ever got there, in view of the statement of the management—are questions which were never solved.

Case 14. Methyl salicylate poisoning. In 1921 a druggist, who had been refused a permit to dispense extract of ginger, offered to a number of his patrons a substitute which purported to be "essence of wintergreen" but the examination of a lot of which disclosed that what he was actually putting out was the undiluted methyl salicylate itself. Although a number of cases of violent illness were reported, no fatalities occurred.

Case 15. Methyl salicylate poisoning. At Rochester two young men, while attending a dance, consumed between them four ounces of "essence of wintergreen" mixed with ginger-ale. Shortly thereafter a second four ounces was so taken. Both had convulsions, with vomiting, and one died that night, the other recovering. An examination of some of the same lot of the essence demonstrated the absence of such substances as methyl alcohol and chloroform. On the assumption that equal portions were consumed this would mean that each got the equivalent of a tumblerful of whiskey with six c.c. (90 minims) of methyl salicylate, the usual dose of the latter being five to ten minims.

Like most other volatile oils, methyl salicylate is distinctly poisonous in overdose. According to the National Dispensatory "such gives rise to drowsiness, followed by cerebral congestion and delirium. Excessive gastric irritability, vomiting, purging, gastro-intestinal pain, rapid pulse, dry hot skin, and difficult respiration are the principal symptoms." Because of the tendency to provoke gastric irritation known to be characteristic of the essential oils, it may be questioned if such are not frequently responsible for the disturbances rather often noted in children as a result of free indulgence in highly flavored carbonated beverages.

Case 16. "Nervetone" Tablets. This preparation, found being put out during 1922 by a Manchester resident, although including in its formula such substances as arsenic, strychnine and corrosive sublimate, was labeled as containing "no dangerous drugs." In view of representations that these tablets had been responsible for the deaths of two children in a neighboring state, this man was caused by us to be convinced that it would be well for him to give up attempting to cure disease, and he accordingly changed his vocation to that of a tobacco salesman.

Case 17. In August 1914, Stella Pilsner, a young German woman resident of Pelham, died in two hours following the taking of corrosive sublimate by mistake for Epsom salts. There were the usual symptoms, including profuse vomiting. The stomach, one kidney and a portion of the liver were forwarded by the referee for analysis, also a jar marked "Epsom salts" and another labeled in ink "Atzsublimat" (corrosive sublimate), each being found true to label and pure. The kidney exhibited marked congestion. Inner walls of stomach much thickened and dull liver-brown, with a few bluish-gray areas, the appearance being eminently characteristic of a normal case of acute poisoning of this character. However, an instructive circumstance from a toxicological standpoint was the fact that, while no mercury whatsoever could be found in the small volume of fluid remaining in the stomach, substantial amounts were isolated from the stomach itself on acid digestion of the tissues with potassium chlorate, and mercury was also found in the kidney and liver.

Case 18. State v. Trudeau. In this interesting case (July 1923), here described in some detail because of differing somewhat from most recorded instances of mercurial poisoning, the wife of a Nashua teamster died under circumstances which, in conjunction with the post-mortem appearances, led the pathologist in charge of the autopsy, performed the following day, to assume that the case represented one of acute alcohol-poisoning. Although understanding that the woman had been drinking, the pathologist claimed to have been uninformed as to the further facts concerning a whiskey glass with a whitish sediment, also a solution in denatured alcohol of corrosive sublimate contained in a tin sprayer, found in the victim's room and alleged to have been purchased for the purpose of killing bed-bugs. In consequence of this oversight it was represented to the chemist on delivery of the stomach that the only question of interest was alcohol, and subsequently during the analyst's absence for a few days and before a systematic examination had been commenced, a formal report of death by alcoholism was rendered to the local authorities.

This report was responsible for the discharge from custody of the husband and a lodger, also for the discarding of the articles found in the room, and it was only because of the fact that the chemist chanced to see a news dispatch to the effect that "no evidence of mercurial poison had been found" that the stomach was subjected to the usual procedure for poisons, an appreciable amount of mercury being found in this organ.

Evidence of criminality on the husband's part

was found by the state in the testimony of the lodger, who was discovered by the former in the woman's room with some liquor at about 1:30 P. M., and who, on immediately going into his own room adjoining, claimed to have overheard the sounds of a scuffle, with spitting and retching, and the words: "I'll mix you a drink so you'll never want another; I'll fill you so d—— full you'll never take another drink." Sounds of moaning were said to have continued for some time after the husband came out, padlocking the door on the outside. The woman's dead body was found at 5:45 P. M., on the testimony this involving a duration of sickness of not exceeding four hours.

As indicated by the record the first autopsy disclosed nothing of striking interest. The kidneys were slightly congested and suggested a slight parenchymatous nephritis. Bladder empty. Intestines empty and showed congestion and degeneration of the membrane the entire length. There was dried vomitus about the mouth. No evidence of lip corrosion noted. Interior of mouth, oesophagus, etc. not observed. On opening, the stomach was found to be entirely empty. No trace of any adherent food or foreign material on the membrane, which latter was comparatively dry and odorless. Reddening rather slight; walls not thickened; a few mouse-gray patches were noted.

Conclusion that the mercury present was ingested in a soluble form was based upon the facts that the amount as found was all absorbed in the stomach tissue (very characteristic of soluble mercurials); that the membrane showed no adhering crystalline particles; that there was a remarkable lack of the usual odor development on storage, and on the fact that it has been demonstrated that such insoluble forms as calomel are dissolved principally in the duodenum and only to a slight extent in the stomach, and that absorption begins only at the ileum.

The body was subsequently exhumed and mercury found as follows:

Organs	Weight	Mercury per 100 grams	Mercury in entire organ	Equiv. as $HgCl_2$
	Grams	Milligrams		Grains
Oesophagus	42	55.6	23.4	0.49
Stomach	200	15.0	30.1	0.63
Tongue and lips	31	14.6	4.5	0.09
Liver	670	2.0	13.4	0.28
"Sections"	455	1.8	8.2	0.17
Intestines (about ½)	600	1.2	7.2*	0.15*
Spleen	64	trace	trace	trace
Cavity fluid (mainly embalming)	150 cc	0.0	0.0	0.0
			86.8	1.81

*Should be doubled for total. Kidneys not analyzed.

The condition of the oesophagus, and the relatively large content of mercury here found as compared to that present below the stomach, were the striking features from a toxicological standpoint. The oesophagus was somewhat roughened, of an ashy-gray hue characteristic of mercurial action. At the base was an accumulation of about a teaspoonful of material demonstrated as being superficial tissue eroded from the oesophagus lining. In explanation of the comparative lack of corrosive action upon the stomach walls it was offered that there was involved a small volume only of a very strong solution (estimated by the defense as at least 20 per cent), of a form (alcoholic) absorbable with great rapidity; that under the alleged conditions of forceable administration, with spitting and retching from the start, rapidly followed by vomiting, no considerable volume of the solution remained long in contact with the stomach.

Aside from the fact that the woman was of notably small stature, as serving to explain the small weight of the liver in this case, the writer considers as a result of some other observations that there is a tendency for this organ in an embalmed body to dry up and shrivel from the normal size following burial for a number of weeks.

No serious attempt was made by the defense to controvert the chemical testimony, nor in fact was the state's allegation that the woman died in consequence of an administration of corrosive sublimate actually denied, it being maintained that the deceased while in a semi-intoxicated condition probably took the poison herself, either through accident or design. Because of the irresponsible as well as the somewhat erratic character, as evidenced by the behavior on the stand, of the state's chief witness, the jury apparently felt that it did not care to convict upon his testimony, and after a five hour deliberation a verdict of acquittal was rendered.

Case 19. State v. Burns. The allegation was that on December 22, 1914, Mary Burns, of Nottingham, caused the death of her common-law husband through the administration by her of potassium cyanide. Motive, jealousy. In this case the chemical examination was made by the late Professor Whitney, of Cambridge. Observation of the woman at the State Hospital resulting in her being found sane, she was duly tried for murder and acquitted.

A Possible Failure to Detect the Presence of Cyanides. A fact well known to toxicologists is that because of its proneness to decompose in the body after death there is liable to be failure to detect cyanide if the interval thereafter is materially prolonged. It has occurred to the writer however that in some instances of non-detection such fact may have been properly ascribable in reality to the body having been embalmed, or to formaldehyde having been add-

ed by the medical examiner to the jars containing the organs,—as unfortunately is now and then done.

So far as observed, none of the standard works on toxicology contain any intimation of the fact that the presence of formaldehyde does nullify the usual tests for this poison. The systematic examination in the Comery case (No. 1), where the body had been embalmed, having afforded negative results for hydrocyanic acid, the writer, recalling the fact that one method of estimation of formaldehyde is based upon the fact that this forms an additive compound with potassium cyanide, tried the experiment of adding cyanide to the formaldehyde-saturated viscera in the distilling flask, with the result that the distillate therefrom gave absolutely no test for the latter compound by either the silver in trate or the iron procedure.

A 0.2 percent solution of potassium cyanide was then made up and to ten c.c. of this two drops of formalin were added. The iron test failed on this completely, and upon adding silver nitrate to a second portion similarly treated and acidulated with nitric acid as usual, the liquid remained quite clear. Distillation was next tried, acidulating (a) with tartaric acid and (b) fairly strongly with sulphuric acid, the distillate in neither case showing any trace of cyanide by the usual tests, although control tests, without addition of formalin, in all instances gave the characteristic reactions definitely.

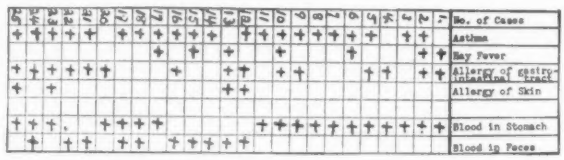
The above serves as an additional argument in support of the general objection to adding any preservative substance of any kind to viscera intended for chemical analysis.

Gastro Intestinal Bleeding in Asthma and Other Forms of Allergy

BY WILLIAM LINTZ, M. D., BROOKLYN

Clinical Professor Medicine, Long Island College Hospital; Senior Attending Physician, Unity Hospital; Physician In Chief, Bikur Cholim Hospital

FOUR years ago while applying the various laboratory investigations to the study of Bronchial Asthma, I found occult blood in the gastric contents and faeces in Asthmatic patients, both during the attack and those who have recently recovered from one. Normally, according to my experience, and the experience of J. R. Bell[1], Reimann[2], and others, with the precautions taken, as stated below, we find no blood in the gastric contents or faeces. I could not explain this phenomenon and attributed this as an accidental finding and dropped this investigation. Recently encouraged by the experimental work on animals by Manwaring, Chilcote, and Hosepian[3], who found that "increased specific capillary permeability will ultimately be shown to be the dominant physiologic change in protein sensitization," I resumed my investigation. My results are as follows: 18 Asthma cases out of 44 examined showed blood in the stomach contents and 10 out of 25 cases showed blood in the faeces. All precautions that are usually taken to exclude exogenous blood, were instituted: meats, fish, fowl, and their extracts, and the brushing of the teeth were excluded for at least three days prior to the test. A uniform test breakfast was employed, consisting of three uneeda biscuits and two glasses of warm water. The gastric extraction was performed 1/2-3/4 hour later, as gently as possible, with a soft rubber tube. In nearly all instances the blood was occult blood. Occasionally the blood was also macroscopic. The benzidine and the guaiac technique, for the detection of blood was employed. The reaction obtained in both the gastric contents and faeces were from very faint to very strong. Some of the cases showed blood in the stomach contents and not in the faeces; others conversely showed blood in the faeces and not in the stomach contents. There were more



instances of the latter than of the former condition. When once the patient showed blood in the gastric contents and did not simultaneously show blood in the faeces, repeated subsequent faeces examinations, almost invariably revealed blood. Aside from the blood, the faeces and gastric juice show no abnormality, although I have seen repeatedly anacidity and hyperacidity. The following are some of the typical findings.

Gastric Analysis	Faeces Examination
Digestion—fairly well	Digestion—fairly well
Amount—about 25 c.c.	Consistency—solid
Odor—sour	Odor—normal
Occult blood—trace	Color—dark brown
Gastric mucus—good trace	Occult blood—present
Total acidity—40 degrees	Mucus—negative
Free Hcl—20 degrees	Fat—many fat globules
Comb. Hcl—3 degrees	Starch—many granules
	Connective tissue—negative
	Muscle fibers—occasional
	Ova and parasites—negative
	Bacteria—very abundant
	Fermentation—negative

Blood in the Gastric juice and faeces was not simply an occasional finding, but was found re-

peatedly in the same patient. In one patient it was found six times on different occasions, although not found every time examined.

What is the source of this bleeding and the mechanism of its production? The answer to these questions is given by Manwaring, Beattie, and McBride[4] from their experience with canine anaphylaxis, which most closely resembles human allergy. "The characteristic intestinal lesion in canine anaphylaxis is a stasis and marked edema of the intestinal mucosa, followed by epithelial desquamation, hemorrhage and superficial necrosis during the latter stages of the shock. This lesion is due to a prolonged contraction of the intestinal musculature, increasing the intra-intestinal pressure sufficient to completely stop the circulation in the mucosa during the period of low arterial blood pressure."

I believe that the blood in the stomach is found as a result of regurgitation from the duodenum similar as bile regurgitates into the stomach, as the result of reverse peristalsis, set up by the stomach tube—to the act of vomiting. The blood in the stomach may also possibly come from another source, and that is from swallowed sputum, for twelve out of fifteen asthmatic sputums examined showed blood microscopically or chemically or both. My impression however is that this is not the source of blood in the stomach.

Discussion

In examining the most important books on diagnosis as to the cause of bleeding in the gastro-intestinal tract, not one mentions allergy. In view of the fact that gastro-intestinal disturbance is a very frequent symptom of human allergy, it is of particular importance to bear in mind that even the presence of blood in the stomach and faeces does not mean organic disease, particularly ulcer. Out of 300 cases of human allergy 95 had also gastro intestinal allergy.

It is this unfamiliarity that allergic individuals may have marked gastro-intestinal symptoms, such as pain, vomiting, distention, diarrhea, cramps, etc. and may even show blood in the gastric contents and faeces, and yet not have any organic disease of the digestive tract, that leads not only to mistaken diagnosis, but to mischievous and useless operations.

Resume

1. Blood may be found in the stomach contents and faeces, in allergic patients, sometimes in considerable quantity.
2. The blood in the stomach is most probably regurgitated from the duodenum.
3. This fact is very misleading as a diagnosis of localized organic gastro-intestinal lesions are made where none exists, and functional gastro-intestinal conditions are excluded when they may exist.

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MISCELLANY

FEDERAL CENSUS DATA

The Federal Census Bureau has announced preliminary figures on the number of mentally diseased, feebleminded, and epileptic persons in institutions for their care in this country. The bulletin announcement gives the movement of patient population for the calendar year 1922 in these institutions, as well as the number of patients on the books on January 1 and on December 31 of that year. The following summary taken from the official announcement includes 526 hospitals for mental disease, 84 psychopathic wards of general hospitals, 136 institutions for the feebleminded, and 32 institutions for epileptics—a total of 750 institutions, making allowance for those that are included in more than one category:

Class of Institution	Patients on Books Jan. 1	Patients on Books Dec. 31
Hospitals for mental disease	279,559	290,457
Psychopathic wards of general hospitals	2,135	1,842
Institutions for feeble-minded	43,636	46,734
Institutions for epileptics	8,823	9,153

—*Mental Hygiene Bulletin.*

CONCENTRATED FOOD FOR THOUGHT

Mr. E. E. Rittenhouse of the Equitable Life Assurance Company in his report to the life insurance presidents says:

Your four hundred muscles are virtually all soft and weak from lack of use.

You are designed as an erect, outdoor animal, with feet and legs for service; but you lie down all night and sit down all day.

You never walk when you can ride.

The arches of your feet are gradually falling, because the muscles provided to hold them up have weakened from long disuse.

Your ancestors lived on a farm; the proportion of people living in cities has increased 131 per cent in fifty years.

You feed your stomach with all sorts of "tasty junk," much of which cannot be fully digested; so you develop auto-intoxication.

With every pound of fat you gain your chances of a shortened life increase.

You eat 30 per cent more food than your grandfather did; and 374 per cent more sugar.

BOOK REVIEW

"War Against Tropical Disease." By ANDREW BALFOUR, C. B., C. M. G., M. D., etc. Published for the Wellcome Bureau of Scientific Research by Balliere, Tindall & Cox, London.

This volume of two hundred and nineteen pages deals interestingly with the problems of tropical sanitation as observed personally by the author in many parts of the Old World and in the New World as well. No attempt is made to cover the subject of tropical sanitation completely or systematically but, in a manner, the reader is confronted personally with conditions as seen through the eyes of the author. For example, one chapter deals mainly with observations made in the West Indies, another is entitled "Sanitary and Insanitary Makeshifts in the Eastern War Areas" and a third "The Palm from a Sanitary Standpoint."

The book will interest physicians and sanitarians alike because of the wide experience and thoughtful observations of the author.

Diseases of The Skin: By RICHARD M. SUTTON, M. D., with one thousand sixty-nine illustrations and eleven colored plates. Fifth edition, revised and enlarged. C. V. Mosby Company, St. Louis. Price $10.

It is but a few months since we reviewed the fourth edition of this work. The fact that editions follow one another with such rapidity is sufficient evidence of popularity.

The text, as before, is short, to the point and, as the author says, the intention is to advise rather than to confuse the less experienced practitioner.

There are even more illustrations than before. It is astonishing how thoroughly the writer has succeeded in illustrating his text. Pictorial examples are given of nearly every disease mentioned, oftentimes, by many pictures.

In addition there are excellent plates illustrating the pathology of the various affections.

With the help of the text and the illustrations it will not be difficult for even the most inexperienced practitioner to at least make a diagnosis of any skin affection he is likely to meet.

The Circulatory Disturbances of the Extremities. By LEO BUERGER. Published by W. B. Saunders Co., Philadelphia and London. 628 pages.

The author is to be congratulated on this very complete volume, dealing with a variety of diseases of the extrmities that have been generally very poorly understood. His researches and writings along this line for many years give us complete confidence in the authenticity of this work.

About one third of the book is taken up with thrombo-angiitis obliterans in every conceivable angle. Through the author's studies, establishing the pathology in this malady, it has become generally known as Buerger's Disease. The volume is well divided and the space to various disorders and fundamental sciences bearing on the subject has been well allotted.

This book will be found extremely useful to many branches of medicine and surgery, as circulatory diseases of the extremities are insidious in onset and are often overlooked in early stages. The student now has a reference book on a subject that heretofore has been vaguely described by short paragraphs in other texts and could only be properly mastered through an exhaustive study of the literature.

The author has been very fair in his estimate of various forms of therapy, surgical and otherwise. No mention is made, however, of the specific organism in thrombo-angiitis obliterans that Rabinowitz has recently described.

The Tuberculosis Worker. By PHILIP P. JACOBS, PH.D. (Pub. Williams & Wilkins Co., Baltimore, 1923.)

There is probably no one in this country who is better equipped to write a book on the subject of the tuberculosis worker and what he has to do in the modern tuberculosis campaign than the author of this volume. His long experience with the National Tuberculosis Association and in other ways have given him a remarkable equipment for this purpose.

The present volume is one of a little more than 300 pages divided in two parts,—the first consisting of methods of tuberculosis work, the second, programs of tuberculosis work,—divided into 26 chapters. At the end of each chapter there is a list of selected references which is of very real value.

It is impossible to review the many different subjects which he discusses. His chapters on newspaper publicity, organization methods, financial methods and coöperation with public officials stand out strikingly in Part I while in Part II the chapters on a local program for urban communities, the relation of state and local associations and the tuberculosis program in relation to other social programs are of equally great importance.

This book is of very real value for everyone who is engaged in the field of tuberculosis. The President of any local organization will find in it much which is of value in what he is trying to do. The nurse and the field worker will likewise find practical, detailed information which will be of help. I believe that every tuberculosis association should have one of these volumes on file and keep it as a handy book of reference to be referred to frequently.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, ASSISTANT EDITOR

CASE 10231

A Russian Jewish bowling alley tender of thirty-eight entered July 13. He understood very little English.

F. H. Not obtained.

P. H. He remembered no illness. He had not been subject to coughs or colds.

Habits. He drank two to four glasses of whiskey and smoked forty cigarettes a day.

P. I. Four weeks ago, without initial or other chill, he began to cough violently all day, especially in the morning on awakening, when he raised a large amount of greenish foul sputum. During the day he raised about a quart of such sputum. He felt exhausted, weak and feverish.

P. E. A thin man, coughing very often and raising a large amount of mucopurulent sputum. Some dyspnea. Face drawn. Slight ptosis of left eyelid. Tinea versicolor on front of chest. Old brown pigmentation of skin inside of both shins and right thigh. Breath foul. Teeth poor. Pyorrhea. Throat reddened throughout. Glands the size of peas and beans in neck, axillae and groins. Area of heart dullness encroached upon by lung. Left border four inches to left of midsternum, right border two inches to left of midsternum. Action rapid. Sounds of good quality. Second sound at apex sharp. No murmurs. Pulses bounding, otherwise normal. Artery walls not palpable. Barrel chest. *Lungs* hyperresonant throughout. Expiration prolonged and wheezing. Many piping moist râles, squeaks and wheezes throughout. *Abdomen* sunken, held rather rigid, tympanitic throughout. External *genitals, knee-jerks, extremities* and *pupils* normal.

T. 99.1°-104.2°. *P.* 108-154. *R.* 24-33 with a terminal rise to 58. *Urine.* ℥ 9-49. sp. gr. 1.016, no albumin or sugar. *Blood.* Hgb. 80%, leucocytes 9,000. *Sputum.* (Two examinations.) Large amount, greenish, frothy. Large amount of pus. Many cells broken down. Great numbers of bacteria of all sorts. Numerous spirochetes. No tb. *Wasserman* positive. *Blood culture* negative. *X-ray* showed shadows over the left lower lung.

The patient raised two to three cupfuls of foul smelling sputum a day. There were no localizing signs on physical examination until July 21, when signs appeared rapidly at the left lower back, at first increased vocal and tactile fremitus with slight dullness and bronchovesicular breathing, then pure bronchial breathing, with increasing numbers of fine moist râles and crackles. The signs increased until they covered almost the entire left back to the spine of the scapula and into the axilla. There were a good many coarse moist râles throughout the right lung. The pulse was rapid and of small volume. There was considerable sweating. The patient rapidly lost ground. The signs were not definite enough to warrant an attempt at drainage. July 22 the pulse was small and thready, the patient somewhat cyanotic, moderately toxic, and very weak. He slept little on account of constant cough. There was constant steady raising of sputum instead of a large amount at any one time. July 22 there were signs of a cavity at the inner border of the left scapula in about the midscapular region. July 23 the patient was very cyanotic all day, and died from cardiac exhaustion.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

This is the history of a man with abscess of the lung or empyema breaking into the lung, or bronchiectasis,—one of those three. And it is of course improbable that it begins as suddenly as this, without any previous cause or premonition. Probably it is because our history is imperfect that this seems to begin, as abscess in the lung can hardly begin, suddenly.

NOTES ON THE PHYSICAL EXAMINATION

1. We have not at the outset any of the physical signs of pulmonary abscess or of the other two causes of purulent foul sputum that I spoke of. We have to suppose that the signs are covered by the expansion of the lung which comes between them and our stethoscope.
2. The chart as we see it here is febrile all the time; it does not show enormous swings, but a constant and pretty high fever.
3. Of course the mouth spirochetes in lung abscesses are of no special interest.
4. They were evidently thinking of the same diagnosis that we are.

DIFFERENTIAL DIAGNOSIS

The meat of this case is in the physical examination given in the last paragraph of the record: in the left lower back signs of solidification and later signs of cavity. The diagnosis is between bronchiectasis and lung abscess. Of course that is not a final diagnosis. Bronchiec-

tasis and lung abscess may be produced by cancer or by aneurism pressing on a bronchus, and either of those things may be in the background here, although we have nothing to suggest them particularly. It is true that there is some glandular enlargement, but it is general, and we have no pressure signs as of tumors or glandular metastases. So that I should say we came down to saying that it is abscess or bronchiectasis of the left lung, possibly due to some pressure cause like aneurism or tumor, but without definite evidence of that. Between abscess and bronchiectasis, in the absence of any etiology,—that is if his history is correct, which it probably is not—in the absence of any etiology, bronchiectasis is a more natural supposition than abscess, because abscess calls for a cause and bronchiectasis does not. We have two types of bronchiectasis, that due to local cause such as foreign body, cancer or aneurism, and that arising without any cause. The latter type is commoner than the first group. I have not discussed foreign body here because being an adult we may assume that he would know if he had swallowed his false teeth or any other foreign body. Children quite often have large foreign bodies in their lungs when they and their parents have no idea how they got there.

If it is bronchiectasis, which on the whole I feel it is, it is not quite clear why he died. But I think we must say that something came in as a complication, and that something is usually pneumonia. The course of cases of bronchiectasis is the course of purulent bronchitis with attacks of pneumonia which may come a number of times in the patient's lifetime.

Likewise if he has abscess I think he must have had pneumonia as a terminal event.

All our signs are on the left side, and it may be that the disease is left-sided. But it is rather commoner to have something on the other side too. If my diagnosis is correct, therefore, my guess is that some bronchiectasis will be found in the right as well as the left lung.

We have a barrel chest and other signs of what we used to call emphysema. But I have ceased to have any confidence that we can diagnose emphysema, and therefore I do not say anything about that.

Outside of the chest have we reason to think of any disease? I do not see that we have. There is a positive Wassermann but no other evidence of syphilis, and in the absence of that evidence we do not believe, any of us in this hospital, in making a diagnosis on the Wassermann alone. The spirochetes in the sputum are not meant to be spirocheta pallida; they are the spirochetes which come so often with lung abscesses. So that I do not think we have anything to make us think of the heart or abdominal organs or of anything except the lung as diseased. If we had cerebral lesions we might think of metastasis of the brain, which often occurs in cases of this sort; but we have not any.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Emphysema.
Putrid bronchitis.
Bronchiectasis.
Toxemia.
Cardiac exhaustion.

DR. RICHARD C. CABOT'S DIAGNOSIS

Bronchiectasis, bilateral.
Terminal pneumonia.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Bronchiectasis.
Gangrene of the lung with areas of pneumonia and organizing pneumonia.
Purulent bronchitis.

3. *Historical landmarks*

Obsolete tuberculosis of the lungs.
Chronic pleuritis.

DR. RICHARDSON: Section disclosed a small amount of subcutaneous fat. There were numerous old pleural adhesions on each side. The bronchial glands were enlarged, pigmented, juicy and soft. The trachea and bronchi contained a large amount of dirty, foul-looking, necrotic fibrinopurulent material. The bronchi generally were dilated, the walls more or less thickened and distorted. These bronchi ramified through the lung tissue and were in relation with numerous smaller and larger discrete and confluent areas where the lung tissue was transformed into soft, disintegrated, brownish-grayish necrotic to semi-fluid stinking material. In other places the tissue was grayish, firm, granular and resembled more the areas of pneumonia consolidation.

DR. CABOT: Do I understand that you are speaking now of both lungs?

DR. RICHARDSON: Yes, both lungs. In addition, in the upper lobe of the right lung there was a small fibrocaseous mass, and in the left lung one or two smaller similar masses,—obsolete tuberculosis. That is a description of bronchiectasis with purulent bronchitis and areas of pneumonia and organizing pneumonia and necrosis and gangrene. It is interesting to note here that in the sections from these lungs I found treponemata resembling quite closely treponemata pallida, but we decided against it. While they looked very much like the syphilitic spirochetes, rather slender and with a good many convolutions, it is to be remembered that in gangrene we find spirochetes which at times look not unlike the spirochetes of syphilis.

The aorta and great branches showed only a slight amount of fibrous sclerosis.

Once in a while we find a pancreas, as in this case, where both the ducts, of Wirsung and Santorini are present, good sized tubes, free and negative; that is, two roads that lead from the pancreas; if one of them is blocked up, use the other.

The gastro-intestinal tract showed here and there a few areas of ecchymosis in the mucosa, but was otherwise out of the picture.

We were not permitted to examine the head.

DR. CABOT: As you read that, Dr. Richardson, it sounds as if there was just as much on one side as the other. Was there any difference so far as you saw?

DR. RICHARDSON: No.

DR. CABOT: All our attention was on one lung during life. We thought you were going to find a good deal on the left, and it was only on general principles that I said you would find something on the right.

DR. RICHARDSON: The lungs were very much alike, even in regard to the old tuberculosis.

DR. CABOT: Did you find any source of pressure to explain the bronchiectasis?

DR. RICHARDSON: No; nothing was found to show any previously existing obstruction or anything in the nature of a foreign body in the bronchi.

CASE 10232

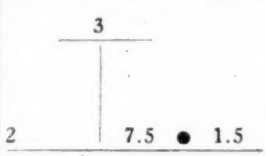
An Italian laborer of forty-two was brought to the Emergency Ward at 2:15 p. m. February 10 unconscious. The history was given by his cousin and neighbors.

F. H. and P. H. Not recorded.

P. I. The patient was found unconscious in his room the day of admission with the gas turned on. He had returned home the evening before to find his wife and children gone as a result of a quarrel regarding the paternity of a child born to his wife the week before. Neighbors said that he was heard moving about his flat at six o'clock the morning of his attempted suicide. At twelve noon the smell of gas was noticed. At one o'clock the doors were forced by the police.

P. E. When brought to the Emergency Ward his breathing was irregular, slow and very shallow. His mucous membranes and ear lobes had the cherry red color common in this type of asphyxiation. The pulse was of small volume and 104 at the radial. *B. P.* 100/?. After 7% carbon dioxid had been administered with O_2 over a period of two hours the color of the mucous membranes became normal and the respirations regular and deep, rate 28. The pulse had improved considerably and fallen to 90. The blood pressure was 120/80.

Five hours after admission he arrived in the ward in fairly good condition, still unconscious, but later opening his eyes when his name was called. Well nourished, muscular, perspiring profusely. Examination of the mouth unsatisfactory. *Lungs* clear. Apex impulse of the *heart* not found. Percussion measurements as shown in the diagram. Pulses and arteries normal. *B. P.* 120/90. *Abdomen, genitals, extremities, pupils* and *fundi* normal. The eyes oscillated slowly from side to side. *Reflexes.* Knee-jerks normal. Romberg?



T. until February 18 101°-103.4°, with one chill February 14, 105.3°; February 19-21 99.8°-101.6°; afterwards 97°-99.4°. *P.* 76-128 until February 22, afterwards 53-80. *R.* 24-40 until February 22, afterwards 18-28. Amount of *urine* not recorded, sp. gr. 1.010-1.030, neutral at one of four examinations, a slight trace to a large trace of albumin at two, leucocytes at three, questionable rare red blood cells at the first. *Blood.* Hgb. 70% at entrance, 90% February 12 and 14, leucocytes 8,800-12,400, polynuclears 81%; many polynuclears showed eosin-staining granules, but there were no true eosinophils; reds 4,320,000-5,200,000, showed moderate achromia; platelets much decreased. *Wassermann* negative. *Non-protein nitrogen* February 12 53.4 mgm., February 24 48. *Lumbar puncture.* 9 c.c. of clear colorless fluid. First two or three drops slightly cloudy. Hydrodynamics normal. Wassermann negative. Total protein 58. Gold solution 1111000000. 3 cells. Globulin 0. Sugar, spinal fluid, 117, blood sugar 140.

Orders. February 11. Magnesium sulphate ℥ vi as enema to be retained. (Not retained.) February 20. Force fluids.

February 11 the patient was again given carbon dioxid plus O_2. He breathed normally and the pulse was good. The blood showed increasing acidosis. He was given glucose subpectorally and intravenous sodium bicardonate ten grams, repeated in three hours. The skin was still very pink. He remained unconscious until February 15. That day he was somewhat more responsive, opened his eyes and drank at times, but did not speak. A story given by a member of the family seemed to indicate some previous psychosis in the man. He was very improvident, beat his wife, had delusions concerning her, and altogether was far from being a valuable member of society. February 16 he was in a very dull mental condition, grinning in a meaningless way. He took fluids well until that afternoon, then vomited several times. February 19 he answered questions and February 24 recognized immediate relatives and called his sister by name. He was disoriented as to time and place. By February 25 he seemed to have reached a relatively stable condition and was

no longer a medical problem. His mental condition made him difficult to care for. February 29 he was discharged to a State institution.

March 26, a month later, this institution reported, "The patient shows very little change since admission. He talks a little, has a loud joyless, insane sort of laugh, holds food in his mouth for an hour or so at a time, and is extremely untidy. He shows a marked mental (?) depression. Physically he is in very fair condition."

April 7 the institution again reported, "Very recently our consulting alienists were called in to examine your patient, and the young man was committed as insane."

Discussion

by dr. maurice fremont-smith

notes on the history

Carbon monoxid poisoning is growing more frequent, not only as a result of illuminating gas poisoning, but with the increasing use of small badly ventilated garages. Not very long ago one of the surgeons of this hospital started up his automobile in his garage, left the doors open and went out for a five minutes' talk with his gardener. When he got back he found the door had been closed and one of his children was lying unconscious on the floor of the garage. The child had vomited. He thought she had probably had some digestive upset and had fainted. He took her out in the air. Then it occurred to him that he had seen the other two children playing near by. He went back into the garage and in the tonneau found the other two unconscious. Fortunately all recovered. The moral is obvious.

Animals can be kept alive for long periods in a concentrated atmosphere of carbon monoxid provided sufficient oxygen is provided at the same time to prevent asphyxia. In other words, the carbon monoxid itself is not a poison. Some rather interesting experiments to prove this were done by Haggard. He incubated hens' eggs for forty-eight hours, then under the microscope snipped off small bits of embryonic neural tissue. These bits he put, in salt solution, in a chamber which he could fill with various gases, and then examined them under the microscope. The tissues grew normally in an atmosphere of pure oxygen, and grew even a little more rapidly in an atmosphere of carbon monoxid and oxygen. In an atmosphere in which very small quantities of illuminating gas were present, however, the neuroblasts grew not at all. There must therefore be some other component in illuminating gas which is definitely toxic; but carbon monoxid itself is harmless provided sufficient oxygen is provided to prevent asphyxiation. The chief factor in illuminating gas poisoning is not, however, this unknown poisonous substance, but the asphyxiation brought about by the carbon monoxid present. What are the mechanics of this asphyxiation? In our ordinary respiration, oxygen is carried to the tissues and carbon dioxid carried away from the tissues mostly in a loose chemical combination with hemoglobin. The amount of each gas that will at any moment stay in combination with the hemoglobin depends upon the partial pressure of these two gases at the time. The oxygen partial pressure in the lungs is fairly high,—one-fifth of the atmospheric pressure. The carbon dioxid pressure is low. The hemoglobin therefore is here practically saturated with oxygen. As the blood goes from the lungs towards the tissues and into the capillaries the oxygen partial pressure decreases and the carbon dioxid pressure increases. There comes a point when the oxygen pressure has decreased to about one half normal, at which there is a sharp separation of oxygen from the hemoglobin and its replacement by carbon dioxid. The oxygen leaves the hemoglobin not only because the oxygen partial pressure is lower, but because it is, as one might say, pushed out by the increasing partial pressure of the carbon dioxid in the tissues. Now when carbon monoxid is present in the inspired air it too combines with the hemoglobin of the blood; but it takes only one three-hundredth the concentration of carbon monoxid compared with oxygen to combine with an equivalent amount of hemoglobin. In other words, carbon monoxid has three hundred times the affinity for hemoglobin that oxygen has. Not only will small percentages combine with and so "withdraw from circulation" comparatively large amounts of hemoglobin, but once combined with the hemoglobin it is difficult to dislodge. When between 50 and 60 per cent. of the hemoglobin is combined with carbon monoxid the remainder is inadequate to carry sufficient oxygen and carbon dioxid for normal respiration, and a condition of asphyxia of the tissues results. The longer the patient is exposed to the gas the more hemoglobin combines with carbon monoxid up to the saturation point for the given tension. When carbon monoxid is present in the inspired air it likewise combines with hemoglobin, and it obeys the same laws as do the oxygen and carbon dioxid. There is this difference, however, that a partial pressure of 1/300 carbon monoxid has the same combining force as *one* of oxygen.

Most cases of carbon monoxid poisoning are breathing slightly when found. Some have stopped breathing. In these cases quick artificial respiration is imperative. The best means is by the Schaefer prone manual method. It is better than any of the mechanical contrivances, which not only take longer but may be actually dangerous. It has been shown by Drinker and Shaw that particles in the bronchi can be forced into the lungs through the use of

the positive pressure apparatus. The likelihood of the most common complication in these cases—pneumonia—is therefore increased. As soon as respiration is started artificial respiration should be stopped.

Were respiration normal and carbon monoxid easily displaced from its combination with hemoglobin fresh air alone would be sufficient to drive out the carbon monoxid and so overcome the asphyxiation. As a matter of fact after prolonged poisoning fresh air alone is not effective for two reasons: because of the tenacity with which carbon monoxid clings to the hemoglobin with which it is combined, and because of the shallowness of the respiration encountered in these patients. To drive the carbon monoxid out of its combination an atmosphere high in oxygen concentration must be used; to increase the depth and rapidity of respiration some respiratory stimulant is needed, and the best respiratory stimulant is carbon dioxid. The respiratory center has, in cases of prolonged poisoning, experienced a three-fold handicap. First it has shared in the general bodily asphyxiation; secondly at the commencement of asphyxiation there has been greatly increased stimulation of the center by the temporarily increased acidity of the blood, and the cells of the center have become fatigued. Lastly, the hyperpnea so induced has pumped out of the body a large part of the carbon dioxid normally present, the carbon dioxid tension becomes lowered, and the respiratory center is thereby deprived of its usual normal stimulant, carbon dioxid. A condition of acapnia has therefore resulted, respiration is shallow, the ventilation of the lungs is slight, and the displacement of carbon monoxid therefore slow. Five to seven per cent. carbon dioxid in 95 per cent. oxygen is therefore given to these patients through a suitable mask. The carbon dioxid stimulates the respiratory center; the action of the lungs is increased, more pure oxygen is brought into contact with the blood in the lungs, and the increased oxygen partial pressure acts to drive out the carbon monoxid from its combination with hemoglobin. The important thing is speed both in starting respiration and in eliminating the carbon monoxid in order that asphyxiation may be as temporary as possible.

NOTES ON THE PHYSICAL EXAMINATION

The non-protein nitrogen is definitely high, possibly due to injury of the kidney through asphyxiation.

Lumbar puncture evidently was done because the man continued comatose, and the question came up as to whether he had cerebral edema and an increased intracranial pressure, as is sometimes found in cases of asphyxiation; or whether there might be some other condition, possibly syphilis or tumor, accounting for his coma.

I should be interested to know the reason for the second treatment with carbon dioxid and oxygen. Probably after two hours of gas treatment all the carbon monoxid must have been dissociated from the hemoglobin. I cannot see any reason for repeating it on the following day.

The persisting cherry red color of his skin would raise some question as to its original cause. It is almost inconceivable that he could still have carbon monoxid hemoglobin in his blood on the following day.

The order on February 11 is important. Evidently it was felt that this patient might have increased intracranial pressure, post-asphyxial, and although his spinal fluid pressure was normal, that he might have edema of the brain. In order to overcome this edema, if present, magnesium sulphate by rectum was ordered.

Dr. Frank Fremont-Smith: The lumbar puncture was not done until February 12, more than 48 hours after exposure to the carbon monoxid; the magnesium sulphate was given the day before. The actual pressure reading of the spinal fluid was 170 mm., which would be a normal reading. It is fair to say that before the pressure can be measured the stilet has to be withdrawn from the lumbar puncture needle and the manometer connection inserted, with the resultant loss of spinal fluid and lowering of pressure, which is sometimes considerable. He undoubtedly had a pressure somewhat higher than 170. We do not know the pressure on the day of admission.

Dr. Lake: What is the relation of his mental condition to his asphyxia? Is that common?

Dr. Maurice Fremont-Smith: No, it is not. Usually if a patient does recover from carbon monoxid poisoning after headache and dizziness and twenty-four hours of malaise he recovers completely.

Dr. Means: I think Dr. Fremont-Smith has discussed this matter pretty completely. Perhaps there are one or two points I could mention. I think he is wise in emphasizing the growing importance of carbon monoxid poisoning. There have been a good many garage cases, and there are going to be more in all probability, and we have to be appreciative of the fact that if they are to be saved, the treatment must be begun immediately.

This particular patient brings up the use of carbon dioxid as a drug, which so far as I know is a comparatively new thing in therapeutics. It is a perfectly rational method of therapy. Any volatile substance in the blood is eliminated largely through the lungs, and carbon monoxid comes in that category. An agent such as carbon dioxid which increases lung ventilation will increase the rate of elimination of whatever substance through the lungs. Dr. J. C. White found a year ago that ether leaves the body much faster when carbon dioxid is used. It has lately been found by Mr. Hunter and Mr. Mudd that this is also true of ethyl alcohol and prob-

ably of methyl. We have in carbon dioxid therefore a therapeutic agent of great value and one that the emergency wards of hospitals ought to be equipped to administer.

I have with me one of Yandell Henderson's papers. It is interesting to read what he says of the speed with which animals recover from carbon monoxid poisoning with different methods of treatment. They will recover in time spontaneously, provided they do not receive a lethal dose of the gas. Observations were made on the saturation of the blood with carbon monoxid at intervals in one group that had no treatment, in one that had oxygen alone, in one that had air and carbon dioxid, and finally one that had carbon dioxid and oxygen. The recovery was slowest in those animals that received no treatment, next in those that inhaled oxygen, somewhat shorter in those that had air with carbon dioxid. That is, ordinarily a little carbon dioxid was better than pure oxygen as a form of therapy. But those animals that had oxygen enriched with a small amount of carbon dioxid recovered very much faster than any of the other groups. The mixture used is now made up by chemical companies. I think that every hospital should have a tank, and that anybody who comes in with gas poisoning ought to receive it right away. It is easy to give, and the apparatus is simple,—a mask, two valves, and a rubber bag.

In regard to the hazards of carbon monoxid, Henderson has shown that the degree of saturation of the blood depends upon the tension of the carbon monoxid in the atmosphere and the length of exposure. Just to use arbitrary figures, the net result of being exposed to a tension of 1 for ten hours would be the same as to be exposed to a tension of 10 for one hour. So in a garage which has a high tension one may become unconscious in a few minutes. On the other hand, with a tension that would not bother one at all for an hour there might be a serious poisoning if one stayed there for many hours.

Another matter of importance is that of lumbar puncture. I think Dr. Fremont-Smith was right in saying that there was not much value in treating this man with carbon dioxid on the second day. I believe the blood then did show some traces of carbon monoxid—that was proved by direct examination—but not enough to do any harm. The failure to regain consciousness indicates brain pathology, perhaps edema, or perhaps hemorrhage. There is a good deal of evidence that asphyxiation does produce edema, and I think that if the treatment is not satisfactory in a few hours, does not bring them out of coma, one should do lumbar puncture, and if pressure is elevated give intravenous hypertonic saline or massive doses of sodium chlorid by mouth. That might prevent some of the complications of this form of poisoning.

Dr. Fremont-Smith spoke of the fact that the gas is dangerous only because of asphyxiation. Dr. Henderson told me that animals with no hemoglobin, such as flies, live happily in an atmosphere that would be fatal to an animal possessed of any hemoglobin.

DR. FREMONT-SMITH: I should like to ask an explanation of this acidosis.

DR. KOEHLER: In severe carbon monoxid poisoning as in other types of anoxemia we may have an initial alkalosis due to hyperpnea, and this may later develop into a slight acidosis. But apparently that was not the case here, because this man developed a very marked acidosis. He went down to pH 7.19*, which is approaching the fatal limit. That was probably due to the fact that he had not received any fluids for a period of three or four days. In regard to giving carbon dioxid on the second day, there perhaps was no definite indication for it. But Barcroft has shown that carbon monoxid may remain in the tissues for some time even after eliminated from the blood. The blood of course will take this up later. He found that in a cat carbon monoxid may be in the spleen pulp for a period of two hours even after it had been taken out of the blood. For that reason these patients should have another treatment of carbon dioxid, preferably a few hours after the first treatment if that has not been effectual. On the second day it probably has no definite value.

DR. WILLIAM D. SMITH: I have nothing to add except that desiccation and acidosis could perfectly well have been avoided. This was an interesting case, a new treatment was tried, and a good many men were interested. The result was that almost before we noticed it he was found to be desiccated and to have a definite degree of acidosis. That I think should not have happened; that was our fault, and undoubtedly added something to the length of time it took him to get back.

DR. MAURICE FREMONT-SMITH: Is high spinal sugar usual in these cases?

DR. FRANK FREMONT-SMITH: We have very few cases. In this case it was well above normal limits. The high normal limits are usually given as 65 mgm. per 100 c.c. The blood sugar in this case was also high—it was taken at the same time as the lumbar puncture. We have one case that came into the hospital in 1922 with a spinal fluid sugar of 126 mgm. per 100 c.c. a few hours after the carbon monoxid poisoning. Twenty-four hours later the sugar had fallen to 92 mgm. We do not yet know the normal interrelationship between blood sugar and spinal fluid sugar, and until this is established we cannot be sure about the normal variations of spinal fluid sugar.

Experimentally it has been shown by Forbes that in cats there is a very marked rise in spinal fluid pressure following carbon monoxid inhala-

*The arbitrary symbol for normal relative acidity is pH 7.4; a higher figure indicates an approach to alkalosis, lower an approach to acidosis. The fatal limit on the acid side is about 7.

tion, and if a trephine has been made in the skull the increased pressure will be so great as to cause a cerebral hernia, even to the extent of lacerating the brain. I have a picture from the March number of the Archives of Neurology and Psychiatry which shows that very definitely.

The question of brain edema that Dr. Means spoke about has not been settled. Microscopic examination of the brains of cats exposed to carbon monoxid poisoning did not show definite evidence of edema. The feeling of the men working in this field is that there is edema, but that they have not been able to demonstrate it.

In regard to the treatment with hypertonic salt, and also in regard to the pressure, we had at the Boston City Hospital a man of twenty-five who was brought in approximately half an hour after removal from exposure to illuminating gas. At that time he was unconscious and was breathing deeply, which is interesting in regard to the possibility of over-ventilation. His skin was pink, but not excessively so. Lumbar puncture, which was done within two hours, showed a spinal fluid pressure of 285 mm. of spinal fluid, which is well above normal, 200 being perhaps the highest limit that we should consider normal. The pressure was reduced to 135 mm. by drainage of 50 c.c. of spinal fluid slowly over a period of twenty minutes. The patient was still unconscious. The following day, twenty-four hours after the first lumbar puncture, he was stuporous. When roused he was irritable and complained of severe headache. A second lumbar puncture done 26 hours after exposure to the illuminating gas showed a pressure of 255, so that the pressure, which had been reduced by drainage to 135, had risen to 255 twenty-four hours later. No spinal fluid was removed at this second puncture. 100 c.c. of fifteen per cent. sodium chlorid solution was given intravenously immediately after the second lumbar puncture. During the latter part of the injection the patient brightened perceptibly and became quite restless. Immediately after the injection he stated that his headache had disappeared. He had flushing of the face and slight chill a few minutes after the injection. Two hours after the hypertonic salt had been given he was sitting up and taking nourishment. That is the only clinical evidence that we have for the value of giving hypertonic salt. He was discharged at the end of a week well, and reported well a month later.

Dr. Means: How long after the time he was gassed was the salt given in this patient?

Dr. Frank Fremont-Smith: It was given twenty-six to twenty-eight hours afterwards.

A Physician: I should like to ask about the rectal use of magnesium sulphate, and if it is anything like as vigorous as hypertonic salt solution?

Dr. Frank Fremont-Smith: Given by rectum in saturated solution magnesium sulphate will reduce the spinal fluid pressure to as great an extent as the intravenous hypertonic salt solution, but magnesium sulphate takes considerably longer, and sometimes, as in this case, is not retained. If the patient can take it by mouth it is more likely to be retained. The sodium chlorid solution given by rectum or by mouth will have the same effect, but it is very disagreeable. Sodium chlorid can be given in capsules or in salol-covered tablets, as is done in this hospital, and will be effective if one is not in a hurry. Intravenous hypertonic salt solution will begin to reduce the cerebrospinal fluid pressure within 5 to 15 minutes. The other takes one half to one hour to be effective.

A Physician: What is the ordinary hazard from carbon monoxid?

Dr. Means: I do not know what it is going to be. Henderson found, I think, that at the corner of Fifth Avenue and Forty-second Street, at the height of traffic, there was a tension high enough, if one stayed in it for twenty-four hours, to give a dangerous degree of saturation. Of course it is not always high, and nobody stays twenty-four hours on that corner, so that it may not be such a tremendous hazard; but it seems to me that in our narrow streets, with a gradually increasing traffic, it is a hazard of some importance. It probably won't render anybody unconscious, but the question is, is it good to live constantly in this atmosphere. The chronic effects may be like those of secondary anemia. The suggestion that Henderson makes is that it is all avoidable, that by having the exhaust of motor-cars pointing upward and the air in garages sucked out through the ceiling there would be no risk whatever.

Miss Painter: I find in the report of a previous discussion of this case at a clinical meeting that one of the two facts of chief importance brought out was that cerebral pathology frequently follows carbon monoxid poisoning,—areas of degeneration in the corpora striata, especially in the lenticular nucleus. I should like to ask Dr. Means and Dr. Fremont-Smith a layman's question. Does the improved treatment, based on so much careful experimental work, promise no more than to save lives many of which must be lived out in insanity?

Dr. Means: It certainly promises very much indeed. Permanent brain injury occurs in a minority of the cases only. The prompt use of the methods outlined above I am sure will save many lives, and my belief is that the vast majority will get entirely well. It should be borne in mind that many of the patients with illuminating gas poisoning are suicides, and already insane before gassing. Whether it is best to try to save these is a moral, not a medical, question. In the automobile cases I think carbon dioxid offers a chance of the saving of much valuable human life. I regard Yandell Hen-

derson's discovery as a distinct advance in therapeutics.

NOTE

Dr. Henry S. Forbes, who has made special studies of carbon monoxid poisoning, first with Dr. Yandell Henderson and now at the Harvard Medical School, found on examining the records of the Boston City Hospital for two years—1919 and 1920—that 134 cases of acute illuminating gas poisoning had been admitted to the wards during this period. Of these not one patient had been readmitted with neurological sequelae or had been committed to an insane hospital unless a definite pathological condition existed prior to the gassing.*

Dr. Forbes writes, "It was learned later that the neurological service saw an occasional case, perhaps one every year or two, of partial loss of memory and some mental impairment following very severe gassing. These cases were usually over sixty years of age and showed evident arteriosclerosis.

"The number of cases of permanent brain damage following severe carbon monoxid poisoning from whatever source is I think less than one per cent. Accurate data are difficult to obtain.

"I strongly agree with Dr. Fremont-Smith and Dr. Means in regard to emphasis in treatment being put upon the urgency of immediate manual artificial respiration if the patient is not breathing normally, followed as soon as possible by CO_2 and oxygen inhalation."

CLINICAL DIAGNOSIS

Carbon monoxid poisoning.

*Jour. Indust. Hygiene, May, 1921, Vol. III, No. 1, p. 14.

CASE 10233

A Canadian housewife of fifty entered February 25 complaining of jaundice, itching skin and inability to eat without vomiting. She was an optimistic person who minimized her troubles and gave a clear and concise history.

F. H. Good as far as known. Six children were living and well.

P. H. Her general health had been excellent. She thought she had had most of the diseases of childhood, but none later. Her last two children were prematurely born at seven months. Ten years before admission she had two months of amenorrhea and three months of normal periods, then profuse uterine hemorrhage relieved by curettage,—probably a miscarriage. After this she had a child stillborn at seven months. Six years later she had apparently suspension of the uterus to relieve miscarriages, with rapid and satisfactory convalescence.

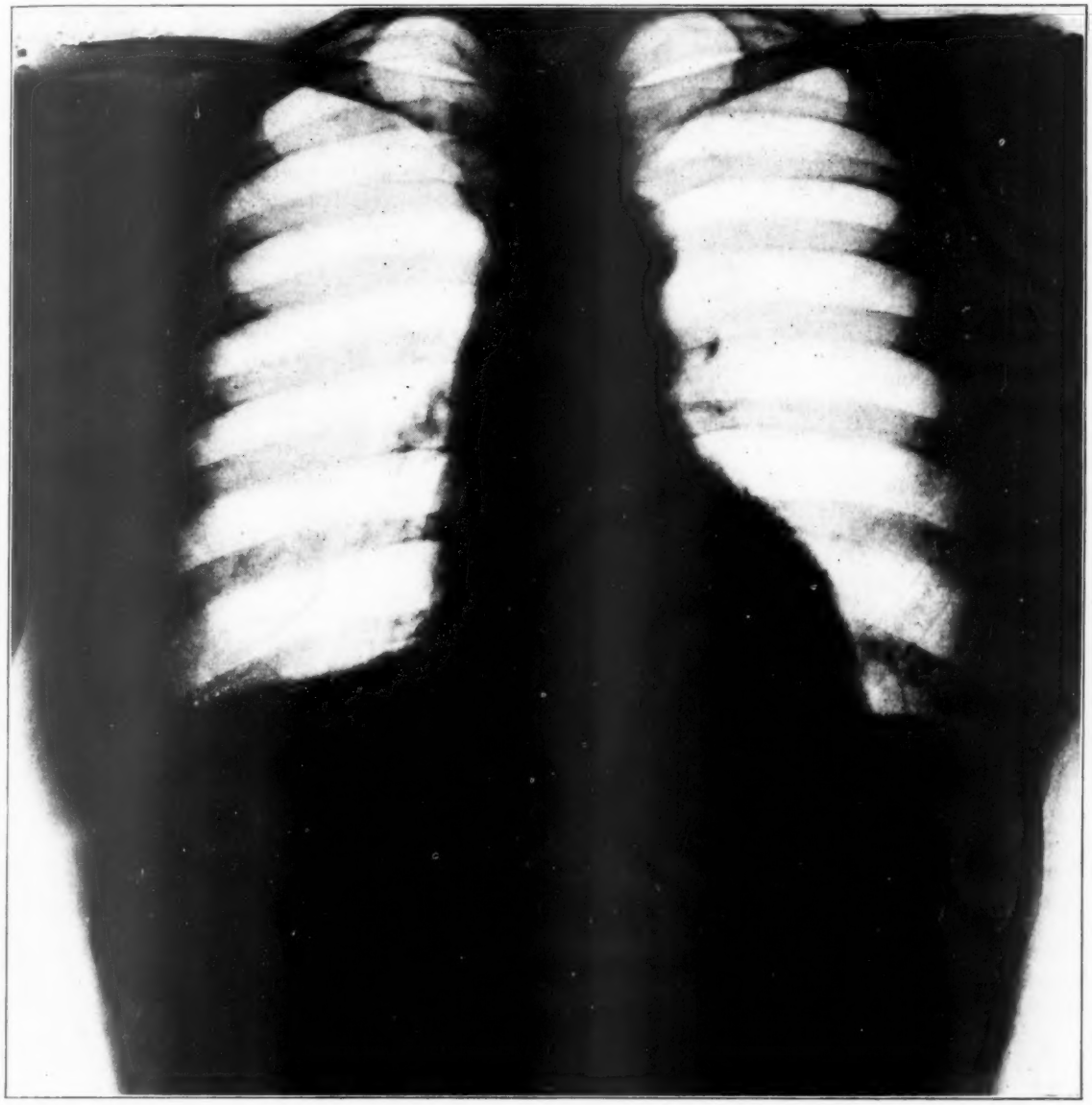
Habits. Good.

P. I. For twelve years she had had attacks of "gas on her stomach" with slight discomfort coming on about once in six months, usually after a hearty meal at night, and relieved by belching induced by tickling her throat. Four years ago she had the first of four sudden attacks of agonizing pain in the epigastrium radiating around to the back, lasting about forty-eight hours, until relieved by hypodermic injections. There was marked residual soreness over the gall-bladder. During the intervals she was quite well except for occasional belching of gas. At the last attack, six weeks ago, the pain was less severe than formerly, did not require morphia, and disappeared after two days. With its onset her skin began to itch and became slightly yellow. A physician found slight tenderness over the gall-bladder. The residual soreness was much less than usual, but the jaundice increased rapidly, and with the itching of the skin had persisted. She had been unable to eat anything except milk and chicken soup on account of nausea and vomiting. Even milk caused some nausea. Her appetite however had not been poor. Her stools had been clay colored for six weeks, but during the past few days slightly brown. Her bowels had been kept open with catharties. She thought she had lost twenty-five pounds during the six weeks. Her urine had been dark brown. Five days before admission she had slight nosebleed.

P. E. A well nourished woman, deeply jaundiced, not acutely ill. Many scratch papules on the skin. *Heart.* Apex impulse not found. Supracardiac dullness 7 cm. No other enlargement to percussion or abnormal findings. *Lungs.* Very slight excursion of the left diaphragm. A few crackles at the left base. *Abdomen.* Wall fat. Palpation not satisfactory. Liver dullness 1 cm. below the costal margin. Edge not felt. Median suprapubic scar. *Genitals, extremities, reflexes* and *rectal examination* normal. *Pelvic examination.* Cervix flat, small (amputated?) *Pupils* normal. Reddish discoloration on outer aspect of left iris.

Before operation *chart* not remarkable, normal amount of *urine*, sp. gr. 1.030, dark, alkaline, bile present, occasional leucocytes; *blood*, hgb. 85%-90%, leucocytes 11,000, polynuclears 72%, reds 6,400,000, normal; platelets tended to be very large. Needle wound February 25 bled for nine minutes. *Bleeding time* February 27 2½ minutes. *Wassermann* negative. *Clotting time* 9-15 minutes. *Clot retraction* slow but good in an hour and a half. *Serum dilution* 1:120. No hemolysis. *Stools* February 26 light brown. February 27 clay colored. Guaiac negative. *X-rays.* Diaphragm rather flat on the left side. Costophrenic sinus shallow. No limitation of respiratory movements. Both lung fields clear.

A few small dense apparently calcified glands at the lung root. Heart shadow prominent to the left. Slight increase in supracardiac dullness. . . . . No definite evidence of gall-stones. Position of duodenum more to right than normally. Its outer portion described a sharp angulation downward. No evidence of gastric or duodenal pathology.



Diaphragm rather flat on the left side. Costophrenic sinus shallow. Both lung fields clear. A few small dense apparently calcified glands at the lung root. Heart shadow prominent to the left. Slight increase in supracardiac dullness.

March 4 operation was done. The patient made a good recovery from anesthesia and had no vomiting or discomfort until the following day, when she vomited and had feeble pulse and cold hands. The pulse was 120 and afterwards ranged from 98 to 120. The following day the temperature rose to 100.1°. Only small amounts of urine were obtained by catheterization. Two days later she was still vomiting and passing very little urine. The temperature fell to 96°. Glucose was given by rectum and subpectorally, March 8 after having 400 c.c. of glucose intravenously she had a chill, with a temperature of 100°. That day she died.

Discussion

BY DR. EDWARD L. YOUNG, JR.

This is a very characteristic story of trouble with the biliary tract extending over a long period of time. The story is of indigestion. Her attacks she calls "gas on the stomach." I think "bilious attacks" is the term most commonly used. What is meant by that may vary with different patients from gas, a little distress, up to really severe pain. Then we get the story

of gall-stone colic, which does not necessarily mean the presence of gall-stones but colic due to obstruction either in the cystic or common duct, generally due to gall-stones, perhaps due to a mucous plug, sometimes to shutting down of inflammatory adhesions. Up to the last attack, apparently, there had been no jaundice. That time there was. That again is more suggestive of a stone which has got into the common duct and has lodged there, causing complete obstruction. But again we must remember that it is not necessarily so. That complete obstruction might be due to an inflammatory condition which had been there so long that the adhesions were completely closing the common duct. However, the condition here is suggestive of cholecystitis with stone closing the common duct.

The loss of weight is not more than is entirely consistent with that diagnosis.

The slight nosebleed of course brings to mind at once the question of whether the jaundice is upsetting the normal coagulation of her blood, and in that way making operation very much more serious.

Serum dilution measures the amount of bile in the system.

February 26 more bile was getting through to the intestine.

Of course the positive X-ray evidence of gall-stones is not very often given. We have to have a calcium deposit to show definitely in an X-ray, and even very old stones may not show that at all. Often however the stomach will show irritability, and there may be a kinking of the duodenum toward the gall-bladder as though pulled up there by inflammatory adhesions, and an abnormal density in the region of the gall-bladder is often shown.

The study that was made on the question of bleeding seems to show that it is not very far out. At least they did not think it bad enough to give intravenous calcium before operation.

Would the supracardiac dullness, the slight enlargement of the supracardiac shadow, the miscarriages, be enough to suggest syphilis to you, Dr. Cabot? Of course the Wassermann is negative.

DR. CABOT: No, it would not. I do not believe we can do it with the X-ray.

DR. YOUNG: It seems to me that we have a pretty clean cut story here and nothing to do but go in and remove the gall-bladder and what I believe to be a stone in the common duct, and drain the common duct for the cholangitis which is there to a certain extent.

DR. CABOT: Would you agree, Dr. Davis, with all that has been said as to diagnosis up to this point?

DR. LINCOLN DAVIS: I should. Personally I have such a fear of post-operative bleeding in these jaundice cases that I should have been tempted I think to use some calcium in this case, even if the clotting time was not greatly prolonged.

DR. CABOT: Is that pretty effective?

DR. DAVIS: It is fairly so. It is the best thing we know of, and the Mayos' figures seem to prove quite conclusively that they have reduced the mortality of jaundice cases very decidedly by giving it. After operation, when the bleeding has begun, one is in such a difficult situation that he wishes he had done anything he could before he began to operate.

DR. CABOT: The main thing is to be sure that we have nothing to reproach ourselves with.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Chronic cholecystitis with stones in common duct.

PRE-OPERATIVE DIAGNOSIS

Cholelithiasis.

OPERATION

Gas and ether. Six inch incision over gall-bladder. The whole gall-bladder region was tacked down with adhesions of the omentum to the liver. These were freed exposing a very much contracted gall-bladder. The common duct was very much distended and in it could be felt a very large stone. Duct opened and a stone the size of an English walnut removed. It was decided not to remove the gall-bladder in order not to increase the shock of the operation. Common duct irrigated and probed. Rubber tube sewed into common duct. Gall-bladder opened and contents removed. Several small stones were removed. The gall-bladder was drained by a large soft rubber tube.

PATHOLOGICAL REPORT

A cherry-sized oval reddish-brown calculus.

H. F. HARTWELL.

FURTHER DISCUSSION

DR. YOUNG: We have what we expected to find. She died four days after operation. That is too long to say that she died purely of shock. The story does not suggest that she died of peritonitis or of hemorrhage, but we know from past experience here that both of those conditions may have been present without clinical evidence. The lack of urine makes us wonder whether or not she had a chronic nephritis that was not obvious beforehand in study, and whether her kidneys refused to pick up the work after the shock of operation. 1.030 is of course a pretty high specific gravity for badly damaged kidneys.

I do not think I have any other suggestion. Dr. Davis, what do you think she died of?

DR. DAVIS: I think that is hard to say. I was wondering about the function of the liver.

Does it state if any bile was secreted after the operation?

DR. YOUNG: It does not in the record, and the report of the operation does not indicate that bile was not present. So that I assume it was not one of the "white bile" cases.

DR. DAVIS: The liver does shut down, does not function.

DR. YOUNG: There had been some bile coming through. The stools were brown on one occasion. And I think if there had been a lack of bile they would have mentioned it at the time of operation.

DR. MIXTER: Sometimes when there is bile seen in the common duct we may not get any drainage of bile following the disturbance. I think Dr. Davis's question is well taken.

DR. DAVIS: That is a thing we should want to know about,—is the patient draining bile? Is the liver active and forming bile, and is it coming out through the tube? We have no data on that. So that one might possibly feel that this was a case of hepatic insufficiency.

DR. CABOT: Suppose you had been sure it was, what would you have done?

DR. DAVIS: I don't think one could do anything. But it does shut down that way if the liver has been obstructed for a long time. It apparently loses the power of rehabilitation.

DR. YOUNG: I thought in those cases they found this white mucoid secretion in the ducts, and nothing else.

DR. DAVIS: I think they do. But without that we can get a very scanty secretion, and it is a poor prognostic sign.

X-RAY INTERPRETATION

Findings suggestive of probable gall-bladder pathology with adhesions involving the duodenum.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cholelithiasis of common duct.
Operation, removal of stone, common duct.
Jaundice.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Cholelithiasis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Stones in common bile duct.

2. *Secondary or terminal lesions*

Operation wound.
Hemorrhage into the peritoneal cavity and retroperitoneal tissues.
Hemorrhagic areas of the pleura and pericardium.
Edema of the lungs.
Dilation of the bile ducts.
Icterus.

3. *Historical landmarks*

Scar of old operation wound.
Slight chronic pleuritis.
Chronic pericholecystitis.
Cyst of left ovary.

DR. RICHARDSON: This woman was said to be fifty-five years of age. The skin and conjunctivae showed well marked icterus, saffron yellow. There was a linear wound in the anterior abdominal wall 17.5 cm. long, closed with sutures. In the upper part there was a small mass of blood-clot. In the right cubital space there was a short sutured wound. From the pubes up there was an old linear scar-like streak.

DR. YOUNG: There was a previous operation. We do not know just what was done.

DR. RICHARDSON: There was a good amount of subcutaneous fat. In the right upper quadrant and on the inferior and superior surfaces of the liver there were massive blood-clots and at least 500 c.c. of fluid blood. The retroperitoneal tissues were infiltrated with blood and blood-clot. Altogether the blood-clot amounted to 1200 c.c. The appendix was wanting.

There was a little fluid in the right pleural cavity, about 200 c.c., and a few c.c. on the left. This fluid was a little bloody. We must account for it. The pleura in places showed hemorrhagic areas, and large hemorrhagic areas were found over the diaphragm. The lungs showed bile staining and much edema, but were otherwise negative.

DR. CABOT: Were there any calcified glands?

DR. RICHARDSON: The glands were negative. The pericardium contained a few c.c. of thin bloody fluid, and there were a few hemorrhagic areas on the epicardium.

The heart weighed 316 grams—full sized—the myocardium bile-stained and a little lax. The valves and cavities were negative. The circulatory apparatus generally was out of the picture, including the portal vein and radicles.

The liver weighed 1427 grams. The tissue was punky and bile-stained. The gall-bladder showed chronic pericholecystitis.

The common bile duct was dilated to 3.5 cm. In the region of the upper part of the duct there were three small stones five mm. to one cm. in diameter. The cystic duct was two cm. in circumference and contained a little blood-clot. The mucosa of the bladder was a little granular and showed hemorrhagic areas, and the bladder contained some blood-clot. The hepatic duct was dilated to 1.5 cm. in circumference. Its mucosa was negative. The great radicles of the hepatic duct in the liver itself were dilated from one to one and a half cm. That dilatation was continued more or less up into their very beginnings. The mucosa of the ducts seemed normal. The ducts contained only a little bile-like fluid.

Of course all the tissues showed bile staining. The uterus and vagina were negative. The left

tube was wanting. In the situation of the left ovary was a multilocular cyst 5x3 cm.

The immediate cause of death was the hemorrhage.

DR. YOUNG: I think Dr. Davis's point is well taken about the hemorrhage, because apparently it was a very important part here. The only other thing to think of in retrospect is whether a transfusion following might have helped in stimulating the liver and in helping to stop the bleeding.

DR. CABOT: Should you say the chief moral of this case is that she came too late—that if she had come earlier, before she was jaundiced, there would probably have been very little risk in the operation?

DR. YOUNG: There would have been very much less risk.

DR. CABOT: And all that Dr. Davis has been telling us—that had been going on a long time and might have been recognized.

DR. DAVIS: Where were the stones in relation to the opening of the common duct?

DR. RICHARDSON: The common bile-duct showed marked dilatation, 3.5 cm. in circumference. This circumference extended down towards the region of the ampulla, where it became one and a half cm. The wall was slightly thickened, the mucosa smooth. In the region of the upper part were three small stones, the largest one cm. in diameter. They were all irregular in shape and crushed under the thumb, showing a brownish crystalline material.

DR. DAVIS: I think it is a most difficult surgical problem to know when we have all the stones out of the common duct. If we can pass a probe down into the duodenum we can be sure there are none below; but how to be sure above is very difficult. Where there are a number of stones we are always haunted by the fear that we may have left some stones higher up that will come down and obstruct later on.

DR. RICHARDSON: The hepatic duct and radicles were markedly dilated.

DR. MIXTER: They may well come down.

DR. YOUNG: I think we are generally safeguarded because the opening in the duodenum dilates and will let small stones through.

DR. DAVIS: Yes, and if we keep up drainage of the common duct with a good-sized tube that will take care of small stones.

DR. YOUNG: I think there are more left behind than we ever hear of.

ILLINOIS leads the world in the rehabilitation of men who have served prison terms. Every good citizen should be proud of this record.

Every man sent to prison must come out. Shall he come out a good citizen or forever be a burden and a menace to society? Under the parole law of Illinois 87 per cent. are reclaimed. Only ten per cent. in the Joliet prison are repeaters. THAT'S THE PROOF.—*The Institutional Quarterly.*

CURRENT LITERATURE

ABSTRACTORS

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A STUDY OF THE BACTERIOLOGY OF THE NORMAL AND INFLAMED CONJUNCTIVA, WITH SPECIAL REFERENCE TO THE PRESENCE OF THE STREPTOCOCCUS AND PNEUMOCOCCUS

MCKEE, S. H. (*Canad. M. A. J.*, vol. 14, no. 3, March, 1924), examined the conjunctival flora of 140 normal individuals; he found 40 negative to microscopic study and culture, while in 48 cases staphylococcus pyogenes albus were found; 9 cases with staphylococcus epidermidis albus, two with staphylococcus pyogenes aureus, 16 with streptococcus pyogenes, 42 with bacillus xerosis, 1 with a bacillus of the diphtheria group, and 1 with Sarcina lutes. These results show that organisms are present which have serious possibilities if operations are done in their presence, and other organisms not found in this series, such as pneumococcus, and colon bacilli, might be expected. His studies of conjunctival infections showed the presence of pneumococcus as by far the most common organism causing inflammation, while conjunctivitis due to the Koch-Weeks, the Morax-Axenfeld organisms and the gonococcus are relatively rare.

[A. W. C.]

RESULTS IN THE TREATMENT OF CONGENITAL SYPHILIS

FORDYCE, J. A., AND ROSEN, I. (*Arch. Derm. and Syph.*, vol 9, no. 3., March, 1924), summarize as follows: The success of prenatal treatment depends on (1) the duration of the infection, (2) early administration of treatment, and (3) the amount tolerated. Negative clinical and serologic findings at birth are not always indicative of the absence of syphilis. It is advised that routine examinations be made at monthly intervals for the first six months, and then every three months for the first two years. Microscopic examination of the placenta may prove of greater value in determining a latent infection than the result of the Wasserman reaction on the blood from the umbilical cord or from the veins during the early months of life. Occasionally cases of active syphilis with a negative serology are seen. Clinical manifestations must always take precedence over laboratory findings. Of 128 treated patients with active syphilis, fifty-five had received two courses or more of neo-arsphenamin and mercury intramuscularly of whom thirty patients, or slightly more than 53%, became negative clinically and serologically, the observation period now extending over two years in some instances. The remaining seventy-three cases consist of two groups—one made up of younger infants, of whom twenty-two, or 30%, became negative with less than two courses of injections given regularly, and the other made up of older children who had received less than two courses of treatment, scattered over irregular intervals, and who had remained positive. Lumbar puncture was performed on 128 children, with negative results in 114 and positive in four-

teen. In the negative group, seventy-four children were negative clinically and serologically, while the remainder, forty, had a strongly positive Wassermann reaction; the positive group had either a positive blood or clinical signs of the disease. In a total of fifty-four syphilitic children, therefore, fourteen cases of neurosyphilis, or about 25%, were found, approximately the same proportion as in adults. From the occurrence of a positive fluid in the early months of life, the inference is that infection of the central nervous system takes place early in the disease, as in the acquired form. In all probability certain mild types tend to disappear spontaneously or under treatment. When the more severe forms are present, the same difficulties in treatment are encountered as in adults. The progrnosis of congenital syphilis depends on: (1) the amount of prenatal treatment; (2) the physical condition at birth; (3) the severity of the infection, whether visceral, cutaneous or neural involvement is present; (4) the time treatment is begun; (5) the type of treatment, and (6) the toleration of treatment.

[A. W. C.]

Poverty and Abortion

Bumm (*Münch. med. Woch.*, Dec. 14, 1923), presents a significant study of the revival of Malthusianism in Germany, as a result of the poverty and suffering following the war. The increasing use of contraceptivis and criminal abortion have already reduced the birth-rate from 40 to 28 per 1000 in that country. He points out the obvious conclusion that this condition constitutes the greatest sociologic peril of the age. [R. M. G.]

Anatomic Findings in Gastric Ulcer

Schmincke, from the pathologic institute at Tübingen, reports (*Münch. med. Woch.*, Dec. 28, 1923), a series of autopsy findings in gastric ulcer, with special reference to the chronic inflammatory condition of the mucosa at remote distances from the focus of disease, and to the relation between gastric ulcer and carcinoma. [R. M. G.]

Streptococcus and Colon Vaccines

Korbsch (*Münch. med. Woch.*, Jan. 11, 1924), reports a series of studies on bacterial vaccines, and concludes that there is great therapeutic value in the use of streptococcus vaccines in the arthritides, of colon vaccines in the neuritides, and of intracutaneous tuberculin injections in lupus. [R. M. G.]

Alimentary Leucopenia

Simon, from Döderlein's clinic at München, presents (*Münch. med. Woch.*, Jan. 28, 1924) a study of alimentary leucopenia in the picture of pregnancy toxicoses, and concludes that such leucopenia is present in all cases before relampsia and pregnancy influitis, but absent in normal pregnancy without vomiting. [R M. G.]

Retroversion and Prolapse

Selheim, from the Franenklinik at Halle, reports studies (*Münch. med. Woch.*, Jan. 28, 1924), which lead him to believe that operative indications should be restricted in retroversion and extended in prolapse of the uterus. [R. M. G.]

Body Structure and Character

Doll, of Karlsruhe, presents (*Münch. med. Woch.*, Jan. 28, 1924) an interesting study of the relations between character and body structure, based on the descriptions of the four temperaments,—sanguine, choleric, phlegmatic, and melancholy,—in the Salernitan rules of health. [R. M. G.]

Portal Thrombosis

Gang, from Sternbry's clinic, reports (*Wien. klin. Woch.*, Feb. 7, 1924) a case of portal thrombosis, with autopsy. Hematemesis was the leading sign, and gastric ulcer and oesophageal varix could be extended. The cause of thrombosis was an unrecognized pericolitis abscess. [R. M. G.]

Blood Transfusion in Hematology

Holler, from Ortner's medical clinic in Vienna, discusses (*Wien. klin. Woch.*, Feb. 28, 1924) the question of the therapeutic use of blood transfusion in hematology. He reports two cases and considers the relative advantages of transfusion before and after splenectomy. [R. M. G.]

Direct Culture of Tubercle Bacilli

Lowenstein, from Paltauf's serum institute, discusses (*Wien. klin. Woch.*, March 6, 1924) his method for the direct culture of tubercle bacilli from infectious material. He finds that some strains of human tubercle will not infect the guinea-pig, and that avian tubercle may cause bone and kidney infection in man. [R. M. G.]

The Cause of Baldness

Stein, from Finger's clinic, presents (*Wien. klin. Woch.*, Jan. 3, 1924) his investigations of the cause of baldness, which he regards not as a result of seborrhea, but as a secondary male sex characteristic on a seborrheic terrain. Its analogue in non-seborrheic individuals is *calvitus frontalis adolescentium*. Neither the latter nor true baldness occur in eunuchoid individuals or in true eunuchs. [R. M. G.]

Tetanus Serum from Cattle

Kraus (*Wien. klin. Woch.*, Jan. 17, 1924) presents his studies on the production of antitetanic serum from cattle, which he believes causes serum-sickness much less often than that from horses, and ought to be used preventatively and curatively in practice. [R. M. G.]

Etiology of Stuttering

Sachs (*Wien. klin. Woch.*, Jan. 31, 1924) discusses the etiology of stuttering, which he compares with strabismus, regarding both as mechanical anomalies of bilatuality. [R. M. G.]

Moliere and the Faculty

In the *Annals of Medical History* for December, 1923, Dr. Joseph W. Courtney sketches at length and with great interest the story of Molière's satirical conflict with the Medical Faculty of Paris, describing particularly the plots of the four plays in which the dramatist carried on this controversy,—*Le médecin volante*, *L'amour médecin*, *Le médecin malgré lui*, and *Le malade imaginaire*. Dr. Courtney also outlines the existing status of the Paris Faculty and conditions of the medical profession and practice in France in the seventeenth century. Molière has been compared to Aristophanes as a comedian and to Swift as a satirist. These medical plays have also a modern kinship with Shaw's *Doctor's Dilemma*. No doubt the medical profession has always deserved criticism, and often ridicule. None has administered this therapeusis with a lighter touch or a more unerring aim than Molière.

[R. M. G.]

Dosage in Deep Rontgen Therapy

Jungling, from Puetries' surgical clinic at Tüingen, discusses (*Münch. med. Woch.*, Feb. 1, 1924), the question of total dosage in deep Röntgen therapy. He believes that in its determination dispersion and scattering may be disregarded, and that the important factors to be considered are the total amount of absorbed Röntgen energy and its relation to the kilogram of body weight. [R. M. G.]

Colon Vaccines in Pernicious Anemia

Von Winterfeld, in a second communication from Burschmann's medical clinic at Rostock, continues his study of the treatment of pernicious anemia with autogenous colon vaccines, and presents a report (*Münch. med. Woch.*, Feb. 15, 1924) of four cases with charts indicating definite improvement following such treatment. [R. M. G.]

Pyelitis Gravidarum

Stoeckel, from his Frauenklinik at Leipzig, presents (*Münch. med. Woch.*, Feb. 29, 1924) his observations on pyelitis of pregnancy, but omits the essential relation of such pyelitis to preëxisting abnormal mobility of the kidney. [R. M. G.]

The Sippy Treatment of Peptic Ulcers

Lyon, D. M. (*Edinburgh Medical Journal*, February, 1924), discussing in detail the Sippy treatment of peptic ulcers, gives the cases suitable for treatment by this method, the indications for surgery and the results of treatment. He points out that the chief objection raised to this method of treatment is the large quantities of alkali that are used, but says that if these are carefully adjusted so as merely to neutralise the acid and leave no excess, no harm should result. [R. C.]

Influence of Lead on Normal and Abnormal Cell-Growth

Bell, W. B. (*The Lancet*, February 9, 1924), in an address on the influence of lead on normal and abnormal cell-growth, discusses at length his investigations. The entire article is extremely well worth reading for those interested in this subject. [R. C.]

The Treatment of Pulmonary Tuberculosis

Young, R. A. (*The Lancet*, February 23, 1924), discussing the treatment of pulmonary tuberculosis, emphasizes four main principles of treatment: (1) To secure the case as early as possible and to be on the watch for suspicious symptoms. (2) To recognize the type and stage of the disease and to adopt treatment accordingly. (3) To increase the resisting power of the individual. (4) To secure as complete rest as possible to the diseased lung, with a view to localising the effects of the disease and preventing systemic intoxication. [R. C.]

Spirochaetal Jaundice in East Lothian

Gulland, G. L. and Buchanan, G. (*British Medical Journal*, February 23, 1924), discussing the epidemic of spirochaetal jaundice among the coal miners in East Lothian, found that the leptospiral organisms found in man and rats in the infected area produce lesions typical of infectious jaundice when inoculated into guinea-pigs. The result of the inoculations proved fatal in from seven to fourteen days. Subinoculation into the same species, with either human or rat strains from dead infected guinea-pigs, proved more rapidly fatal in both cases, the period being five to six days. [R. C.]

Ocular Palsies

Feiling, A. (*British Medical Journal*, February 9, 1924), discusses the subject of ocular palsies. In 45 cases of ocular palsies studied he classifies these cases from the etiological point of view in the following groups:

1. Syphilis (including tabes; no case of general paralysis of the insane has occurred), 15 cases, or 33.3 per cent.
2. Cerebral tumours, 5 cases.
3. Encephalitis lethargica, 6 cases.
4. Sinus infections, 5 cases.
5. Ear disease, 2 cases.
6. Trauma, 1 case.
7. Vascular lesions, 3 cases.
8. Disseminated sclerosis, 2 cases.
9. Migraine, 1 case.
10. Post-diphtheritic neuritis, 1 case.
11. Congenital ophthalmoplegia, 1 case.
12. Of doubtful etiology, 3 cases.

[R. C.]

Effect of Thyroid and Ovarian Gland Extracts in Cases of Previous Miscarriage and Stillbirth

White, A. (*British Medical Journal*, February 2, 1924), in an article on the effect of thyroid and ovarian gland extracts in cases of previous miscarriage and stillbirth, reports excellent results in nine cases in which there was a previous history of miscarriage or stillbirth by giving during pregnancy every night thyroid (⅛ to ¼ grain) and ovarian extract (5 grains). She advises beginning the treatment at five months or earlier, as in this case the baby tends to be bigger. [R. C.]

Ovarian Pregnancy, with Report of a Case

Sutton, Lyle A. (*American Journal of Obstetrics and Gynecology*, Vol. VII, No. 1, January, 1924), after discussing the various theories of ovarian gestation, gives the following criteria necessary for a diagnosis of ovarian pregnancy:

1. The tube on the side of the pregnancy must be intact.
2. The fetal sac must occupy the position of the ovary.
3. The ovary must be connected with the uterus by the utero ovarian ligament.
4. Definite ovarian tissue must be found in the wall of the sac.

Many cases reported as ovarian pregnancies do not fulfill these conditions. The author's case is fully presented.

He believes that it is probable that these pregnancies occur in endometrial implantation on the surface of the ovary. This belief is well supported by the author's logical deductions from the pathological findings in his own case as well as in other cases which he cites. [W. T. S. T.]

Asthma and Infections of the Accessory Nasal Sinuses: A Study Based on 62 Cases

Heatly and Crowe (*Johns Hopkins Hospital Bulletin*, Dec., 1923) basing their work on 62 cases discuss the relationship of asthma and infections of the accessory nasal sinuses. They state that indiscriminate operations on the nose and accessory sinuses are to be condemned; that, if attempted, they must be properly indicated and radical in the sense that they aim to eradicate all existing regional infection. Operative measures, so attempted, will improve a very definite proportion of asthmatic cases. They should, however, always be undertaken as a part of a general therapeutic programme. [J. B. H.]

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ULTRA MODERN INFANT FEEDING

THE trend of the times in pediatric advance, with especial reference to infant feeding, seems to be to find out how much the infant's digestive organs can stand. Protein milk, dried milk and lactic acid milk have come to stay, and it has been demonstrated that they are more digestible than other forms of milk, breast milk always excepted. Breast milk has not been tampered with excessively as yet, but there is no doubt that the eager eyes of the investigators will soon be turned that way. Cereals and green vegetables are being added to the dietary at even more tender ages. Eggs, once forbidden before the eighteenth month, are now considered by some as the last word in the prevention of rickets in the very young.

Milk is now being acidified by the addition of commercial lactic and even hydrochloric acid —imagine the horror with which, a few years ago, the thought of the acidification of milk would have been greeted—and now Alfred F. Hess and Milton J. Matzner, (Jour. A. M. A.: 82, 1604, May 17, 1924) report on the value of milk acidified with lemon juice and combined with egg yolk. Fame awaits the bold investigator who can rear an infant on vinegar and lobster with, perhaps, a dash of salad dressing; and the indications seem to be that he may be successful. Other investigators, we have been given to understand, have found a practical substitute for cow's milk in boiled liver soup There are many food stuffs scattered through the world, and their application to infancy opens up unlimited fields of research.

Delicate as the infant's digestive faculties have been wont to be considered, there is no doubt that their limits of safety have a wider range than our grandfathers thought or dreamed of. Most of the investigators along lines of infant feeding have mixed their messes with the aid of common sense. There is some danger that others, fired with the same enthusiasm, may try and advocate methods beyond the bounds of reason. The proof of the pudding is in the eating, and the best guarantee of a feeding system would be the observation, at five years of age, of the children who had been brought up upon it.

THE CHANGING MORTALITY RATE IN NEW YORK CITY

IN a statistical review of the past fifty years The Department of Health of New York City has published a record of the diminished mortality rate of the more important diseases during this period among its citizens. At the beginning of this period the death rate from all causes was 31 as compared with 12 for 1923, or a reduction of 61%.

In another way of putting the facts, if the death rate during the period from 1877 to 1923 had continued 185,737 persons would have died in this latter year. The actual number of deaths was 69,452, a saving of 116,285 lives.

Among children under five years of age the death rate during the period from 1877 to 1923, was 105 children per 1000 living in that age group. In 1923 this rate was reduced to 20 per 1000, a reduction of 81%. The principal factors in this reduction seem to have been the control of the infectious diseases of childhood and a pure milk supply.

The classification of infant mortality applies to children under one year of age. Twenty-five years ago 205 infants died out of every 1000 born in New York City, whereas at the present time the number has been reduced by about 68%, which is a saving of 17,900 lives the past year.

Smallpox, typhoid fever and malaria are now comparatively small factors in causing death. Since 1868 the mortality caused by diarrhoeal diseases among children has fallen from 36 to 2 per 1000.

Scarlet fever, measles and whooping cough show a decline in virulence which is striking.

Diphtheria began to be less serious after 1894 when antitoxin was first used. In 1895, 164 children out of every 1000 died and the number has steadily declined, reaching 9 in 1923.

The rate in Bright's and nephritis cases rose steadily until 1904 and has shown a gradual decline since then.

Pulmonary tuberculosis has declined from 405 per 100,000 in 1872 to 75 in 1923.

Cancer and heart disease are both on the up grade.

The increase in the expectancy of life applies to the period under thirty-five years of age. Those who live beyond this period have not added to the average expectancy to any great extent.

Preventive medicine has accomplished great feats in conserving life in the early years, but very little in the later periods.

Assuming that the New York figures are fairly representative of conditions elsewhere, careful and sane living, regular health examinations and early resort to hygienic and remedial measures must for the present be the resources of those living after the middle period of life.

THE ANNUAL DINNER

PRESIDENT BIGELOW has secured for speakers after the annual dinner of the Massachusetts Medical Society Dr. Charles W. Eliot, Dr. Eugene R. Kelley, Dr. J. Edgar Park, Mr. Harold Baynes, Robert G. Dodge, Esq., and Dr. Roger I. Lee. Each of these men will deliver a message of great interest. It is hoped that every person present at the dinner can arrange to stay through the time allotted to these gentlemen.

UNREASONABLE ECONOMY

THE Massachusetts Department of Mental Diseases asked for an appropriation of $200,000 from the State for emergency expenses. The Commission on Administration and Finance recommended a reduction of this sum to $100,000. Dr. George M. Kline, the commissioner, has made an earnest plea before the Committee on Ways and Means for approval of the original request. He feels that if this amount of $200,000 is cut in two it will be necessary to discharge some employees and thereby hamper the department. This would be unwise for this department has shown economy in administration even to the extent of inadequate salaries to its professional staffs. The physicians in charge of the various departments are experts and are not paid salaries commensurate with the responsibilities which they are expected to meet.

We, in common with the citizens of the State, expect rigid economy in the charitable departments, but the tremendous problems of mental disorders require study by the best trained minds and there should not be any inhibition of the functions of this department.

Massachusetts stands high among the other states in the care of its dependent insane. We are in duty bound to give these unfortunate people the best possible care. The responsibility extends far beyond the individual patient and reaches into every phase of social life. The surface has only been studied, for the safety of the living and the welfare of future generations must be definitely considered by those who have understanding of the causes and prevention of insanity. Preventive medicine is being applied to a great extent in dealing with the ordinary bodily infirmities but comparatively little has been done in studying, classifying, and treating the abnormal mental tendencies of children, except in those cases where there are demonstrations of defects easily recognized by the laity. The psychiatrists have not been given a fair chance. The State Department of Public Health has been convinced that it must enter upon a ten year intensive study of the physical condition of the child. The Department of Mental Diseases should meet their own problems in the same way but there are fewer men interested in this work than in general preventive medicine. Indeed, the lack of sufficient numbers of trained psychiatrists is our great obstacle to the prosecution of an effective campaign.

Psychiatrists are not born ready made. The routine medical education does not adequately prepare doctors to be allies of the State Department of Mental Diseases. Long and intensive training is required in institutions specializing in psychiatry. Everything possible should be done to attract well endowed men to the study of the mental deviations, and since the training may be obtained in state institutions, a fairly liberal state policy should be followed.

We hope that Dr. Kline's appeal will meet with favorable consideration.

RECOGNITION OF FOUR EMINENT PSYCHIATRISTS

THE St. Louis Training School for the Feeble-Minded has named its four dormitories Walter E. Fernald, George L. Wallace, George M. Kline and Malcolm A. Bliss.

In selecting three citizens of Massachusetts the institution has recognized the contributions by these men in the field of mental hygiene. Massachusetts is favored in having these men.

Dr. Bliss has a national reputation among neurologists and he will undoubtedly enjoy having his name associated with the Massachusetts men.

EFFECT OF TEMPERATURE ON THE HUMAN BODY

THAT the human body, in a state of rest and in still air, cannot endure indefinitely a temperature higher than 90 degrees F. with 100 per cent relative humidity, has been determined by Department of the Interior investigators at the Pittsburgh experiment station of the Bureau of Mines, coöperating with American Society of

Heating and Ventilating Engineers. In the course of the tests, it was noted that the heavier and stouter men of the experiments, when subjected to uncomfortably hot temperatures, lost more weight than the lighter and thinner men, but as a rule could endure such temperatures for a longer period and complained less of the exhaustion which followed. Loss of weight in the subjects experimented with gradually increased with an increase in atmospheric temperature. Whenever the subject drank ice water he immediately gained in weight, and in all cases the subject, within 24 hours, usually regained the entire weight lost. Subjects who drank ice water freely after exposure to high temperatures felt no ill effects, tending to disprove the assumption that such action develops severe cramps.

CARBON MONOXIDE SELF-RESCUER

"Carbon monoxide self-rescuers," or simply "self-rescuers," are pocket-size gas respirators which protect the wearer from air contaminated with poisonous carbon monoxide gas.

The purpose of the self-rescuer is to help miners to escape from mines in which fires are burning or explosions have occurred, by providing protection from carbon monoxide for at lease one half hour. The self-rescuer can be used similarly for a limited time by workers above ground who may through accident become surrounded or entrapped by atmospheres containing carbon monoxide in concentration up to 2 per cent.

Two hazards threaten the miner who escapes serious injury by fire or violence in a large mine explosion: asphyxiation by poisonous carbon monoxide gas; and suffocation by insufficient oxygen to support life. In order to save himself, the miner must either erect a barricade against afterdamp and await restoration of ventilation and rescue, or take a long chance of finding entries not permeated by afterdamp through which to escape. The self-rescuer removes the hazard of carbon monoxide poisoning in air containing not more than 2 per cent carbon monoxide for one half hour or more, and accordingly greatly increases the miner's chance of saving his life, provided there is sufficient oxygen present to support life.

The Department of the Interior, through the Bureau of Mines, recently approved the "M. S. A. self-rescuer" manufactured by the Mine Safety Appliances Co., Pittsburgh, Pa., after the appliance had passed all the tests and requirements of the bureau's Schedule 14A. Serial 2591, just published, describes the construction and details of the M. S. A. self-rescuer, as approved by the Bureau of Mines, and discusses its performance under test conditions. Copies of Serial 2591 may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

Therapeutic Column

The Salicylates

The salicylates have been long employed in acute rheumatic fever, various other types of arthritis, muscular rheumatism and certain forms of neuritis.

Sodium salicylate stands foremost among the salicylates and while its action is much the same as salicylic acid, it is much less irritating and being soluble is more readily absorbed. When salicylic acid is administered it is probably converted into salicylate of soda as rapidly as it is taken into the blood. One drachm of the salt contains about fifty grains of the acid.

Sodium salicylate should be given as early as possible in cases of rheumatic fever. Children of ten years may take ten grains every two hours and adults twice as large doses. Each dose should be accompanied by twice as much bicarbonate of soda to allay as far as possible gastric irritation. In many cases after 24 or 48 hours of intensive medication there are indications for a cessation or diminution of the drug, such as tinnitus aurium, deafness, nausea, vomiting or diarrhoea. Smaller amounts up to the tolerance of the patient may then be given. If its use is continued after the poisonous effects are noted, one may see delirium.

In one case of rheumatic fever in a man of fifty, which I saw in consultation, there were attacks of syncope with convulsive movements and a pulse of forty, suggesting Stokes-Adams syndrome. He had had a severe attack of rheumatism and had been given large doses of salicylate of soda without other medication. The attacks stopped within a few hours after the cessation of the drug. In a number of cases of rheumatic pericarditis with effusion, I have seen the signs subside under salicylate of soda, although some have stated that it should not be given in this condition because of its depressing effect on the heart. The depression is probably due to toxemia and not to the drug. Just how long salicylate of soda should be given is often a question. I usually continue it in small doses well into the convalescence. Sometimes when it has been stopped the joint symptoms return.

We will not go into the much discussed question of whether or not salicylate of soda will prevent heart lesions. We do know that it is more effective in stopping the joint inflammations of rheumatic fever than any other drug at our command and since we arrest the progress of the disease there we hope to accomplish the same result in other structures. Certainly a pericardial effusion will sometimes disappear under its action.

Hypodermic and intravenous injections of sodium salicylate have been strongly advocated by Siebert and by Mendel, Rubens and Conner. The last author considers its administration safe, painless and easily performed. The drug

vious year; although, there was this year a much more limited outbreak than the preceding year. In Salt Lake City, 12 of the 52 cases proved fatal, or a fatality rate of close to one-quarter.

SMALLPOX CASES, DEATHS AND FATALITY RATES, AMERICAN AND CANADIAN CITIES, 1922 AND 1923

	1923			1922		
	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases
U. S. and Canada (750 cities)	12,856	84	.65	13,056	544	4.17
U. S. (654 cities)	12,238	82	.67	12,395	543	4.38
Canada (96 cities)	618	2	.32	661	1	.15

—Bulletin Metropolitan Life Ins. Co.

NEWS ITEMS

Doctor Wellington W. Jones of Housatonic is spending a month in post graduate work in Louisville, Ky., including the Alumni meeting of the University of Louisville of which he is a graduate. He will later attend the meeting of the American Medical Association held in Chicago, Ill., returning home the latter part of June.

Trip will be made by automobile. Mrs. Jones will accompany him.

DIRECTOR OF THE U. S. VETERANS BUREAU

General Frank T. Hines, director of the U. S. Veterans Bureau, today announced the appointment of Dr. Benjamin W. Black, as Executive Officer of the Medical Division of the Bureau, succeeding Dr. A. J. McIntyre, who has been detailed as Chief of the Insurance Medical Section of the Bureau.

Dr. Black, who is a reserve officer of the U. S. Public Health Service, was born on May 21, 1887, in Fillmore, Utah, and attended the Universities of Utah and Chicago. Prior to his appointment as Executive Officer, Dr. Black was Sub-district Manager of the Salt Lake City Office of the Bureau.

In July, 1917, he was commissioned a lieutenant in the Medical Reserve Corps of the army. He served overseas for 10 months with the 157th Infantry, with the rank of major. He was discharged in July, 1919, and accepted his commission with the reserve corps of the Public Health Service on May 1, 1920. His present rank is that of surgeon.

Dr. McIntyre was born in Richmond, Virginia, on September 13, 1877, and is a graduate of Georgetown Medical School, class of 1902. During the World War he held a reserve commission in the U. S. Public Health Service. Dr. McIntyre has been Executive Officer of the Medical Division for the past three years.

REMOVALS

Dr. Ralph H. Seelye of Springfield has moved his office to 146 Chestnut street.

Dr. J. L. Chereskin has moved his office from 720 North St. to 235 Main St., Springfield.

Dr. Helene S. Glickman now has her office at 487 Sumner Ave., Springfield.

Dr. Howard L. Jackson has his office at 11 Pearl St., Springfield.

Dr. Bernard J. Klein now has his office at 721 North St., Springfield.

Dr. S. J. Paul has his office at 136 Main St., Springfield.

Dr. O. C. B. Nason has moved from Sharon to East Cambridge where he has his office at 148 Berkshire St.

Dr. Arthur J. Horrigan now has his office at 175 State St., Springfield.

Dr. Frank F. Celce and Dr. Jean H. Celce now have their office at 190 Chestnut St., Holyoke.

Dr. James H. Payne has moved his office from 1230 Washington St. to 18 Glenville Ave., Allston (Boston).

CORRESPONDENCE

LONDON LETTER

(From Our Correspondent)

April 22, 1924.

THE LAWS REGULATING INSANITY

For some considerable time the laws with respect to insanity have given rise to general dissatisfaction. No one has been satisfied with the situation as regards mental disorder, and the experts, perhaps, least of all. The definition of insanity or of mental disorder sufficiently serious to render it advisable for the sufferer to be confined or detained under restraint, is notoriously a moot point.

There is to begin with no recognized standard of normal mental stability, a deviation from which constitutes mental disorder, and if there were there is no recognized degree of deviation from the normal which calls for restraint. Of course, the obviously insane are easy to diagnose, but there are cases of insanity of which the symptoms are apparent only to the practised and skilled observer—and in certain cases perhaps not always apparent even to him; and there are cases of incipient insanity which cannot be certified and, under existing conditions, cannot be observed and properly treated. If the definition of insanity or mental disorder is difficult for the expert, what must it be to the man in the street?

Moreover, there is a wide variance of views as to what constitutes mental disorder of the dangerous type between medical men and men of law. Medical men, or a great many of them, aver that in the very nature of things they must be fitter judges of serious mental aberration than their legal brethren. On the face of it and on first consideration, this would appear to be a remarkably sound argument, but upon analyzing the same one begins to have doubts. The lawyers unhesitatingly say that if medical men's definition as to insanity was always taken, the law on the subject would be more confused than it is at present. A specialist, for example, on any disease

is apt to look for certain symptoms, and very frequently finds them. A mental specialist is liable possibly to think that the case is worse than it really is and wish to safeguard against any risks.

However, as said before, the lunacy question has reached a critical stage, and nothing but a thorough overhauling and revision of the existing laws will satisfy the present state of public opinion. The Harnett versus Bond trial has been the last straw Harnett, a well-to-do farmer, was detained for some time in a registered house for the reception of lunatics, was let out on probation, and recommitted. Whereupon, Harnett brought an action against a Commissioner in Lunacy concerned in the case and the medical manager of the house in which he was detained. The action was tried and Harnett was allowed by the jury damages to the amount of £25,000 ($125,000) against the two medical men. They appealed and the action is now being retried.

One consequence of the result of the first trial is that medical men are extremely chary of certifying any lunatics as such, however patent their insanity may be. Especially are medical men fearful of certifying insanity in its earlier stages. In fact, in this country, the early stages fail to receive adequate treatment, because there are no facilities afforded for skilled observation and treatment if necessary. Moreover, there is a very natural reluctance, greatly intensified by the Harnett case, to proceed at once to the extreme measure of certification. Meanwhile a tragedy occurs, for the reason that short of certification no adequate steps can, as a rule, be legally taken, the law not allowing detention except after this drastic measure.

A Mental Treatment Bill, which will shortly be brought before Parliament, may improve matters to some extent. Also a Royal Commission is about to be appointed to study the administration of the lunacy laws. With reference to these laws it may be said that they are old, although they have been patched up on several occasions, and it cannot but do good to ventilate the whole question by means of a Royal Commission, except that Royal Commissions sometimes appear to take an unduly long time to make their investigations, cogitate and deliberate over the same and send out their report.

It is certain that the general public view with a good deal of distrust the conduct of the lunacy laws and the management of mental institutions, perhaps especially of the so-called private ones, and, therefore, light thrown on the subject will be to the advantage of everyone concerned. During the past few years there has been much correspondence in medical and lay journals with respect to the management of institutions for the care of those mentally afflicted, and this correspondence has naturally tended to arouse and even inflame the community at large.

It is a most intricate and complicated matter, and one cannot avoid sympathizing with medical men placed in the invidious position of having to decide on a doubtful case. Theirs is a great responsibility. If they refuse to certify, as many of them now do and will refuse, a tragedy is likely to occur; many have occurred. If they commit to an institution they may incur public obloquy and be mulcted in heavy damages. They are indeed on the horns of a dilemma.

It is very likely, according to some absolutely certain, that, in the early stages of some forms of insanity, proper treatment may be effective. It is argued forcibly by many authorities that certain forms of insanity have origin in a physical defect or affection, and it is further argued that, if cases exhibiting early symptoms of mental disorder are placed under skilled observation for a time, the fundamental cause may be discovered. It appears to have been proved that dementia precox is due or frequently owing to gastro-intestinal trouble by the production of a general toxemia. This is somewhat of a digression, and be it as it may, there would appear to be every reason to advocate the institution of observation hospitals or observation wards to general hospitals for the behoof of those attacked by early symptoms of mental disorder as well as for the protection of the general public. As with physical so with mental disease, the axiom of Sir James Mackenzie applies: find out the originating cause and treat that, and the rest will follow. A suggestion is made in the *Lancet*, April 12 last, by an authority, that a radical change in procedure should be introduced into this country, viz., the withdrawal from the jury of the issue of insanity at all trials, and its reference to expert medico-psychologists. But, as stated previously, the public and the lawyers are averse from medical men being given the power of deciding. In a subsequent this very important question will be dealt with further. It will not be long before there are more developments.

MINISTRY OF HEALTH AND PULMONARY TUBERCULOSIS

Mr. F. W. Edwards, presiding at the Conference of the Association of Approved Societies, held in London on April 12 last, said that the New Zealand government offered £50,000 ($250,000) to develop the Spahlinger treatment of tuberculosis if the Ministry of Health would put down another £50,000; but, according to Mr. Edwards, the Ministry refused because its medical members were still opposed to the treatment. There was only one thing which prevented its use, and that was the financial position of the discoverer. In the opinion of Mr. Edwards, if it were used tuberculosis could be stamped out to the same extent as smallpox had been. A resolution was carried urging the executive committee to continue their efforts until the remedy was made available for members of the approved societies. A large number of people, including many members of the medical profession, have declared their conviction that the Spahlinger treatment is effective.

ANNUAL REPORT OF THE MEDICAL OFFICER OF HEALTH FOR CALCUTTA

The annual report of the Medical Officer of Health for Calcutta shows that bronchitis is the chief cause of death in that city, and that there, as in Great Britain, diseases of the respiratory system exceed all others as dangerous to human life. The report further shows that the great influenza epidemic of 1918-1919 exercised a terrible effect on the health of India. The medical officer points out that the mortality from pneumonia and broncho-pneumonia, though rapidly improving during the past two years, is still almost double the pre-influenza average.

BABY CLINICS

The middle classes in the cities of this country are beginning to envy the workers their baby clinics and welfare centers. The introduction of this system into Great Britain (to Dr. Eric Pritchard, director of the Infants' Hospital, Vincent Square, London, much of the credit is due) has created something like a revolution in the death rate and rearing of the infants of the poor. In the year 1922 in Leeds the death rate among infants whose mothers did not attend the welfare centers was 300 per 1000 born, while the death rate among those treated at a welfare center was 76 per 1000. At Huddersfield, for similar reasons, the infant mortality has been reduced to less than one-half of what it had been previously. In other words they had a somewhat better chance of life than the middle class baby not attending a center, in spite of overcrowding, filth, lack of sunshine, and all the hundred and one things which militate against a baby's chance of life. As regards feeding, the poor baby, as a rule, is better fed, as he or she is fed at the breast, while the middle class infant in these days unfortunately is usually fed

artificially, and every baby fed artificially should be under a doctor's care.

The Infants' Hospital, Vincent Square, alluded to above, is not only an institution for the scientific treatment of young babies suffering from the diseases and disorders of nutrition, but is an infant center of the greatest importance in London The staff of medical men of the institution, headed by Dr. Eric Pritchard, one of the pioneers of infant welfare work in this country, includes amongst its members Dr. Helen McKay, who worked in Vienna during and after the war on the problem of rickets, Dr. Donald Patterson, and several other well-known authorities on infants' diseases and infant management. It also has a large staff of nurses and visitors skilled in the care and rearing of infants. Its human material is practically unlimited as the hospital and out-patients' department are situated on the outskirts of one of the most poverty-stricken districts of London. It may be mentioned that as a postgraduate center for infants' diseases and infant welfare work it is unequalled in this country and may be recommended as such to American medical men visiting London for postgraduate work.

Among the books published recently of value to medical men may be mentioned "Organic Substances, Sèra and Vaccines," by D. W. Carmalt Jones, M.D., F.R.C.P.; "Insulin in General Practice," by A. Clarke Begg, O.B.E., M.D.; "Ear, Nose and Throat Treatment," by Dr. Georges Portmann, translated from the French by R. Scott Stevenson, M.D. These are published by Wm. Heinemann, Ltd., London. "The Problem of Cancer," by Dr. William Seaman Bainbridge of New York, has been translated into Spanish from its second edition. It will be remembered that the second edition was translated into French some two years ago at the special request of the King and Queen of the Belgians, and was the first book to be issued from the Royal Press of the University of Louvain after the destruction of the University buildings by the Germans.

NOTICES

The Massachusetts Medical Society

ANNUAL MEETING OF THE COUNCIL

At the New Ocean House, Swampscott, Friday, June 6, 1924, at 12 o'clock, noon.

Business:

1. Reports of Standing Committees in order of appointment. (See inside front cover of program.)
2. Report of Committee of Nine.
3. Report of Committee on Cancer.
4. Report of Committee on Advertising by and of Fellows.
5. Report of Committee on Uniform Health Examinations.
6. Election of Standing and Special Committees for 1924-1925.
7. Election of officers and orator for 1924-1925, by ballot.
8. Appointment of two delegates to Legislative Conference, under auspices of Bureau of Legal Medicine and Legislation of the American Medical Association, at Chicago, June 11, 1924.
9. Fill vacancies in offices of parent society from Franklin District caused by election held by that district outside the time specified in the By-Laws.
10. Proposed amendment to Chapter V, Section 2, of the By-Laws, requiring a residence of at least six months in a district before an applicant may be examined for fellowship.
11. Proposed amendment to Chapter I, Section 8, of the By-Laws, permitting the council to deprive of the privileges of fellowship Fellows who have been convicted in a court of law of a crime involving moral turpitude.
12. Proposed amendment to Chapter IV, Section 5, of the By-Laws, changing the control of the Sections at the annual meeting to correspond more nearly with the provisions of Chapter XIV of the By-Laws of the American Medical Association, by which their sixteen Sections are governed.
13. Incidental Business.

WALTER L. BURRAGE, *Secretary.*

Brookline, May 30, 1924.

Councilors are reminded to sign one of the attendance books before the meeting.

The Cotting Lunch will be served immediately after the meeting.

NURSES GATHER IN CONVENTION JUNE 16 TO 21—MANY EMINENT SPEAKERS

From the 46,000 nurse members of the American Nurses' Association is expected the largest gathering of professional women ever assembled in this country when the 24th National Nursing Convention meets in Detroit, Mich., June 16 to 21.

In this biennial meeting of the American Nursing Association and the National Organization for Public Health Nursing, and the annual meeting of the National League for Nursing Education bringing together experts from all parts of the United States and Canada, the American Red Cross Nursing Services will have a prominent part. A brilliant program has been arranged, including governmental public health, institutional and private duty nursing.

THE MASSACHUSETTS STATE NURSES' ASSOCIATION

The twenty-first annual meeting of this association will be held June 6-7, 1924, in the Lecture Hall in the Central Library, Boston Public Library, Copley Square, Boston. The program consists of lectures and discussions. A demonstration will be held in the Nurses' Class Room of the Thayer Nurses' Home, Massachusetts General Hospital.

The program may be obtained by applying to Jessie E. Cotton, R.N., New England Hospital for Women and Children, Dimock Street, Boston.

DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

WEEK ENDED MAY 24, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Chickenpox	136	Pneumonia, lobar	94
Diphtheria	127	Scarlet fever	290
Encephalitis lethargica	4	Septic sore throat	2
Epidemic cerebrospinal meningitis	4	Syphilis	51
German measles	92	Tetanus	1
Gonorrhea	81	Suppurative conjunctivitis	15
Influenza	9	Trachoma	2
Measles	785	Tuberculosis, pulmonary	134
Mumps	289	Tuberculosis, other forms	31
Ophthalmia neonatorum	10	Typhoid fever	10
Pellagra	1	Whooping cough	70

SOCIETY MEETINGS

STATE, INTERSTATE AND NATIONAL SOCIETIES

June 6 and 7:—Mass. Medical Society, Annual Meeting, New Ocean House, Swampscott.

June 6 and 7:—American Therapeutic Society, 25th annual meeting, Toronto, Canada.